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REPORT NO. GDC-GPP-79-006 (IIA) CONTRACT NASS-33527 JUNE 1980

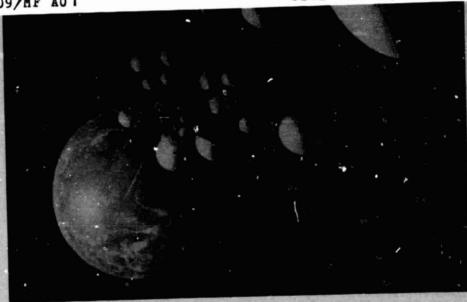
### GEOSTATIONARY PLATFORM SYSTEMS CONCEPTS DEFINITION STUDY

# FINAL REPORT VOLUME IIA APPENDIXES BOOK 2 OF 2

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Convair Division

&

COMSAT

for the

National Aeronautics and Space Administration GEORGE C. MARSHALL SPACE FLIGHT CENTER Huntsville, Alabama



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#### **FINAL REPORT**

## GEOSTATIONARY PLATFORM SYSTEMS CONCEPTS DEFINITION STUDY

#### VOLUME IIA APPENDIXES BOOK 2 OF 2

**JUNE 1980** 

Submitted to GEORGE C. MARSHALL SPACE FLIGHT CENTER National Aeronautics and Space Administration Marshall Space Flight Center, Alabama 35812

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## GEOSTATIONARY PLATFORM SYSTEMS CONCEPTS DEFINITION STUDY FINAL REPORT

VOLUME I	EXECUTIVE SUMMARY
VOLUME II	TECHNICAL ANALYSIS, TASKS 1 - 5, 3A
BOOK 1 OF 3	TASKS 1 AND 2
BOOK 2 OF 3	TASK 3
BOOK 3 OF 3	TASKS 4, 5, AND 3A
VOLUME II(A)	TECHNICAL APPENDIXES
BOOK 1 OF 2	AFPENDIX A – G
◆ BOOK 2 OF 2	APPENDIX H - L
VOLUME III	COSTS AND SCHEDULES TASK 6

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William T. Carey, Chief

Applications Group, PS06

George C. Marshall Space Flight Center

Huntsville, Alabama

1 July 1980

#### CONTENTS

APPENDIX		Page
A	COMMUNICATIONS PLATFORM TRAFFIC REQUIREMENTS	A-1
В	VIDEO CONFERENCING FORECAST	B-1
С	INTERSATELLITE LINK CAPACITY REQUIREMENTS	C-1
מ	LINK BUDGETS	D-1
E	PAYLOAD DATA SHEETS	E-1
F	PAYLOAD ASSIGNMENTS	F-1
G	PLATFORM SYNTHESIS	G-1
H	SERVICING FLIGHT ANALYSIS	H-1
I	GEOSTATIONARY PLATFORM COST MODEL RUNS	I-1
J	FUNDING SPREAD ANALYSIS	J-1
K	RADIATION ENVIRONMENT OF INTELSAT V	K-1
L	THE SPACE RADIATION AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATIONS SATELLITES	L-1

.. APPENDIX H
SERVICING FLIGHT ANALYSIS

#### APPENDIX H

#### SERVICING FLIGHT ANALYSIS

#### Includes

- o Shuttle and OTV costs per MSFC data (plus low cost Centaur (r') @ \$50M)
- o RTS costs per MSFC info
  - Reused: \$2M per flight
  - Expended: \$32M per flight
- o Two locations/traffic models
  - Western Hemisphere/Nominal
  - Western and Atlantic/High

#### Excludes

- o Cost of items being transported to GEO and installed/exchanged/resupplied
  - Payload equipment
  - Bus subsystem equipment
  - Batteries and propellant
- o Packaging cost of the above items

#### MISSION LIFE VS. SERVICING CONSIDERATIONS

#### Operating Mode Definitions

MODE B Platforms are designed for 8 years life. They are replaced by another platform for years 9 - 16. They are not serviced on-orbit.

8 year life is considered to be state-of-the-art technology and is the nominal design point for weight and cost.

Critical items are dual-redundant.

MODE C Platforms are designed for 16 years life. They are not serviced on-orbit.

Critical items are triple-redundant.

Extra effort will be required to design and produce components for 16 year life.

We have already assessed a weight penalty of +29% over the 8 year life subsystems for the 16 year life subsystems.

Development of batteries that will last for 16 years is an extention of the state-of-the-art. We are assuming that it can be done - for a price.

#### MODE C'

Platforms are designed for 16 years life; however, they are designed for resupply of propellants and replacement of batteries at 8 years.

All other subsystem and payload equipment must last for 16 years.

The subsystems have triple redundancy and a +29% weight penalty as in Mode C.

#### MODE E

Platforms are designed for 16 years life; however, they are designed for on-orbit servicing of subsystem and payload equipment.

Subsystems and payload equipment are dual-redundant, for highly critical parts. This provides a 10% weight saving over Mode B.

Subsystems and payloads are designed with modularity for onorbit servicing. This imposes a 25% weight penalty.

The overall weight penalty for Mode E is +12.5% compared to Mode B.

Platforms are designed with a 3 year supply of propellant. This must be replaced at intervals no longer than 3 years, or may be "topped-off" at more frequent intervals if the service vehicle is not fully loaded.

Batteries are replaced at 8-10 years.

During the mission life, 100% of the payload equipment will be replaced for updating purposes (assume production cost only).

During the mission life, 52% of the subsystem equipment (and 100% of batteries) is replaced.

#### MODE S-1

Servicing Flights (Recoverable Mode)

#### Assumptions and Groundrules

- 1. Teleoperator transferred by OTV from LEO → GEO → LEO on each servicing flight. OTV and TELEOP always recovered.
- 2. Teleoperator mass LEO + GEO: 873 kg  $[M_{RTS(Up)}]$  GEO + LEO: 822 kg  $[M_{RTS(Dn)}]$

- 3. Tare weight for resupplied items and propellant is 20% of net weight (includes RTS attachments).
- 4. Packaging for supplies is not returned to LEO.

#### MODE S-2 Servicing Flights (Expandable Mode)

#### Assumptions and Groundrules

- 1. Teleoperator transferred by OTV from LEO + GEO, and expended after each servicing flight.
- 2. Teleoperator mass LEO + GEO: 873 kg [MRTS(Up)]
- 3. Tare weight for resupplied items is 20% of net weight (includes RTS attachments).
- 4. Packaging for supplies is expended.
- 5. OTV is expended.

#### MODE S-3 Servicing Flights (OTV Reusable/RTS Expended)

#### Assumptions and Groundrules

- 1. Teleoperator transferred by OTV from LEO → GEO.
- 2. Teleoperator expended each flight.
- 3. OTV returned empty to LEO.
- 4. Teleoperator mass LEO → GEO: 873 kg
- 5. Tare weight for resupplied items and propellant is 20% of net weight (includes RTS attachments).
- 6. Packaging for supplies is not returned to LEO.

#### SERVICING TRANSPORTATION COST

#### Includes

- o Shuttle
- o OTV
- o RTS

#### **Excludes**

o Costs of equipment and consumables transported to GEO.

Table H-1. Servicing Flight Costs - Mode C' - Mission Set N (Mode S-1 Reuseble OTV and RTS)

		1		Ground	TG OTV I Mated		TG OTV Mated	(l) 2 S7 Space	
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 1168 kg per Flight	Cost at 39 \$M per Flight, \$M	No. of Flights at 2474 kg per Flight	Cost at 80 \$M per Flight, \$M	No. of Flights at 13.686 kg per Plight	Cost at 126 \$M per Flight, \$M
3	52nC'	31	20,243	18	702	9	720	2	(252)
7	33qC'	19	15,357	14	546	7	560	2	(252)
16	36rC'	12	13,373	12	468	6	480	1	(126)
17	37pC'	9	11,422	10	390	5	400	1	(126)
18	54bC'	10	11,185	10	390	5	400	1	(126)
22	38fC'	9	12,023	11	429	5	400	1	(126)
24	39eC'	8	10,710	10	390	5	400	1	(126)
29	56eC'	7	10,675	10	390	5	400	1	(126)
30	56vC'	7	11,440	10	390	5	400	1	(126)
34	40dC1	6	9,256	8	312	4	320	1	(126)
41	41oC'	5	9,710	9	351	4	320	1	(126)
46	42gC'	5	8,796	8	312	4	320	1	(126)
47	43nC'	4	9,870	9	351	4	320	1	(126)
51	43hC'	4	8,912	8	312	4	320	1	(126)
59	47jC1	3	7,786	7	273	4	320	1	(126)
60	47IC'	3	8,251	9	351	4	320	1	(126)
67	48kC1	2	7,786	7	273	4	320	1	(126)
68	48mC1	2	7,786	7	273	4	320	1	(126)

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused.

2. Partial fights rounded up to next integer.

3. Each platform serviced once.

( ) = Lowest cost

Table H-2. Servicing Flight Costs - Mode C' - Mission Set N (Mode S-2 OTV and RTS Expended)

			[ ]		entaur 1 Mated	(r', C	entsur Mated	(f) Ground	IOTV   Muted	(p) 1 S Ground	rg orv Mated	(n) 1 S' Space	TG OTV		
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 3663 kg per Flight	Cost at 94 SM per Flight, SM	No. of Flights at 3663 kg per Flight	Cost at 82 SM per Flight, SM	No. of Flights at 4873 kg per Flight	Coat at 91 \$M per Flight, \$M	No. of Flights at 5f29 kg per Flight	Cost at 99 \$M per Flight, \$M	No. of Flights at 9975 kg per Flight	Cost at 140 SM per Flight, SM	at 22,336 kg per Flight	Cost at 216 SM per Flight, SM
3	52aC'	31	20,243	6	564	6	492	5	455	4	396	2	299	1	(216)
7	33qC'	19	15, 357	5	470	5	€10	4	364	3	297	2	280	1	(216)
16	36rC'	12	13, 373	4	376	4	328	3	273	3	297	2	280	1	(216)
17	37pC'	9	11,422	4	376	4	328	3	273	2	(190)	2	280	1	216
18	54bC1	10	11,185	4	376	4	328	3	273	2	(198)	2	280	1	216
22	30fC'	9	12,023	4	376	4	328	3	273	3	297	2	200	1	(216)
24	39cC'	8	10,710	3	200	3	246	3	273	2	(190)	2	290	1	216
29	\$6eC'	7	10,675	3	280	3	246	3	273	2	(196)	2	200	1	216
30	\$6vC'	7	11,440	4	376	4	328	3	273	2	(194)	2	280	1	216
34	404C1	6	9,256	<b>^3</b>	282	3	246	2	192	2	196	1	(140)	1	216
41	41oC1	5	9.710	3	282	3	246	2	182	2	198	1	(140)	1	216
46	42gC'	5	8,796	3	282	3	246	2	192	2	190	1	(140)	1	216
47	43nC*	4	9, 176	3	282	3	246	2	182	2	196	1	(140)	1	216
51	43hC'	4	8,912	3	282	3	246	2	192	2	190	1	(140)	1	216
59	47jC'	2	7.766	3	282	3	246	- 2	182	2	196	1	(140)	1	216
60	471C'	2	8,251	3	282	3	246	2	182	2	198	1	(140)	1	216
67	48kC'	2	7,786	3	282	3	246	2	182	2	190	1	(140)	1	216
60	48mC'	2	7, 786	3	282	3	246	2	192	2	196	1	(140)	1	216

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$326 expended.

Partial flights rounded up to next integer.
 Each platform serviced once.

( ) = Lowest cost

Table H-3. Servicing Flight Costs - Mode C' - Mission Set N (Mode S-3 OTV Reusable/RTS Expended)

				(q) OTV Ground			Reusable Mated	Space Mated		
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 2038 kg per Flight	Cost at 69 \$M per Flight, \$M	No. of Flights at 4041 kg per Flight	Cost st 110 \$M per Flight, \$M	No. of Flights at 15,381 kg per Flight	Cost at 156 \$M per Flight, \$M	
3	52aC'	31	20,243	10	690	5	550	2	(312)	
7	33qC'	19	15,357	8	552	4	440	1	(156)	
16	36rC'	12	13,373	7	483	4	440	1	(156)	
17	37pC'	9	11,422	6	414	3	330	1	(156)	
18	54bC'	10	11,185	6	414	3	330	1	(156)	
22	38fC'	9	12,023	6	414	3	330	1	(156)	
24	39cC'	8	10,710	6	414	3	330	1	(154)	
29	56eC'	7	10,675	6	414	3	330	1	(156)	
30	<b>56</b> vC'	7	11,440	6	414	3	330	1	(156)	
34	40dC'	6	9,256	5	345	3	330	1	(156)	
41	41oC'	5	9,710	5	345	3	330	1	(156)	
46	42gC'	5	8,796	5	345	3	330	1	(156)	
47	<b>43</b> nC'	4	9,870	5	345	3	330	1	(156)	
51	43hC'	4	8,912	5	71	3	330	1	(156)	
59	47jC'	2	7,786	4	276	2	220	1	(156)	
60	471C'	2	8,251	4	276	2	220	1	(156)	
67	48kC1	2	7,786	4	273	2	220	1	(156)	
68	48mC1	2	7,786	4	276	2	220	1	(156)	

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused; \$32M expended.

2. Partial flights rounded up to next integer.

3. Each platform serviced once.

( ) = Lowest cost

Table H-4. Servicing Flight Costs - Mode E - Mission Set N (Mode S-1 Reusable OTV and RTS)

	r			-	TG OTV		TG OTV Mated	(I) 2 ST Space	
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 1169 kg per Flight	Cost at 39 \$M per Flight, \$M	No. of Flights at 2474 kg per Flight	Cost at 80 \$M per Flight, \$M	No. of Flighta at 13.686 kg per Flight	Cost at 126 \$M per Flight, \$M
5	33aE	19	39,263	34	1,326	16	1,280	7	(882)
11	55qE	15	37,073	32	1,248	15	1,200	7	(882)
21	38rE	9	33,261	29	1,131	14	1,120	7	(882)
25	39bE	8	31,298	27	1,053	13	1,040	7	(982)
26	39pE	8	33,707	28	1,092	14	1,120	7	(882)
33	40cE	6	29,219	25	975	12	960	7	(882)
35	40fE	6	30,370	26	1,014	13	1,040	7	(882)
39	41eE	5	27,808	24	936	12	966	7	(882)
42	41dE	5	26,801	23	897	11	(880)	7	802
43	41vE	5	28,641	25	975	12	960	7	(882)
48	430E	4	29,026	25	975	12	960	7	(582)
52	43gE	4	27,940	24	936	12	960	7	(882)
56	44nE	3	28,176	25	975	12	960	7	(882)
58	44hE	3	27,186	24	936	11	(880)	7	882
64	47jE	2	24,707	22	858	10	(800)	7	882
66	471E	2	25.378	22	859	11	(880)	7	882
70	49kE	2	24,707	22	858	10	(800)	7	882
72	50mE	1	22,726	20	(780)	10	800	7	802

- Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused.
  - 2. Partial flights rounded up to next integer or to 7, whichever is higher.
  - 3. Each platform serviced seven times.
- ( ) = Lowest cost

Table H-5. Servicing Flight Costs - Mode E - Mission Set N (Mode S-2 OTV and RTS Expended)

		gar vers s			(r) C	entaur i Muted	(r') C	enteur Mated	(f) Ground	OTV d Mated	(c) I Si Ground	rg orv Mated	. 🖁	I'G OTV Mated
	Item No.	Set No.	No. of	Total Servicing Mass for IC Year Mission, kg	No. of Flights at 3663 kg per Flight	Coat at 94 SM per Flight, SM	No. of Flights at 3663 kg per Flight	Cost at 82 SM per Flight, SM	No. of Flights at 4873 kg per Flight	Coat at 91 \$M per Flight.	No. of Flights at 5623 kg per Flight	Cost at 99 \$M per Flight, \$M	No. of Flights at 9975 kg per Flight	Cost at 140 \$M per Flight, \$M
	HU.				11	1,034	11	902	8	728	7	(693)	7	980
	5	3JuE	19	39,263		1,034	11	902	8	728	7	(693)	7	980
	11	55qE	15	37,073	11	846	9	738	7	(637)	7	693	7	960
	21	30rE	ş	33,261	9	846	9	738	7	(637)	7	693	7	900
	25	3966	8	31,298	9	846	9	738	7	(637)	7	693	7	940
	26	39pf:	8	32,707	9		*	856	7	(437)	7	693	7	840
	33	40c1	6	29,219	<b>u</b>	752	9	738	7	(437)	7	693	7	980
ıı.	35	40fE	6	30,370	9	846	8	656	7	(637)	7	693	7	906
- 8	39	41eE	5	27,898	8	752	8	656	7	(637)	7	693	7	980
	42	41dE	5	26,801	6	752	8	656	7	(637)	7	693	7	986
	43	41vE	5	28.641	8	752	8	656	7	(637)	7	693	7	980
	48	43oE	4	29.026	8	752	<del>-</del>	656	7	(637)	7	693	7	988
	52	43gE	4	27,940	8	752	8	656	7	(637)	7	693	7	966
	56	44nE	3	28,176	8	752	8	656	7	(637)	7	693	7	980
	58	44hE	3	27, 186	8	752	8	(574)	7	637	7	693	7	980
	64	47jE	2	24.707	7	658	7	-	7	637	7	693	7	980
	66	47)E	2	25,378	7	658	7	(574) (574)	7	637	7	693	7	900
	70	49kE	2	24,707	7	658	7	•	7	637	7	693	7	984
	72	50mE	i	22,726	7	658	7	(574)		441	-			

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$32M expended.

<sup>2.</sup> Partial flights rounded up to next integer or to 7, whichever is higher.

<sup>3.</sup> Each platform serviced seven times.

<sup>( ) =</sup> Lowest cost

Table H-6. Servicing Flight Costs - Mode E - Mission Set N (Mode S-3 OTV Reusable/RTS Expended)

							Reus	able
Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, k	No. of Flights at 2038 kg per Flight	Cost at 69 \$M per Flight, \$M	No. of Flights at 4041 kg per Flight	Cost at 110 \$M per Flight, \$M	No. of Flights at 15,381 kg per Flight	Cost at 156 \$M per Flight, \$M
33aE	19	39,263	20	1,380	10	1,100	7	(1,092)
55qE	15	37,073	19	1,311	10	1,100	7	(1,092)
38rE	9	33,261	17	1,173	9	(990)	7	1,092
38bE	8	31,298	16	1,104	8	(880)	7	1,092
39pE	8	32,707	16	1,104	8	(880)	7	1, 092
40cE	6	29,219	15	1,035	8	(880)	7	1,092
40fE	6	30,370	15	1,035	8	(880)	7	1,092
41eE	5	27,908	14	966	7	(770)	7	1,092
41dE	5	26,801	14	966	7	(770)	7	1,092
41vE	5	28,641	14	966	7	(770)	7	1,092
43oE	4	29,026	15	1,035	7	(770)	7	1,092
43qE	4	27,940	14	966	7	(770)	7	1,092
44nE	3	28,176	14	966	7	(770)	7	1,092
44hE	3	27,186	14	966	7	(770)	7	1,092
47jE	2	24,707	13	897	7	(770)	7	1,092
471E	2	25,378	13	897	7	(770)	7	1,092
49kE	2	24,707	13	897	7	(770)	7	1,092
50mE	1	22,726	12	828	7	(770)	7	1,092
	No.  33aE 55qE 38rE 38pE 39pE 40cE 41eE 41dE 41vE 43oE 43qE 44nE 44hE 47jE 47jE 47jE 49kE	No. Platforms  33aE 19 55qE 15 38rE 9 38bE 8 39pE 8 40cE 6 40fE 6 41eE 5 41dE 5 41vE 5 43oE 4 44nE 3 44hE 3 47jE 2 47lE 2 49kE 2	Set No. of No. of No. of Platforms  33aE 19 39,263 55qE 15 37,073 38rE 9 33,261 38bE 8 31,298 39pE 8 32,707 40cE 6 29,219 40fE 6 30,370 41eE 5 27,808 41dE 5 26,801 41vE 5 28,641 43oE 4 29,026 43qE 4 27,940 44nE 3 28,176 44hE 3 27,186 47jE 2 24,707 47lE 2 25,378 49kE 2 24,707	Set No. of No. of Platforms No. of Platforms No. of No. of No. of No. of No. of No. of Platforms No. of No. of Platforms No. of Plights at 2038 kg per Flight No. of Platforms No. of Platforms No. of Platforms No. of Plights at 2038 kg per Flight No. of Platforms No. of Plights N	Set No. of No.         Servicing Mass for 16 Year Mission, k         Flight 2038 kg per Flight, \$M           33aE         19         39,263         20         1,380           55qE         15         37,073         19         1,311           38rE         9         33,261         17         1,173           38bE         8         31,298         16         1,104           39pE         8         32,707         16         1,104           40cE         6         29,219         15         1,035           40fE         6         30,370         15         1,035           41eE         5         27,808         14         966           41vE         5         28,641         14         966           43cE         4         29,026         15         1,035           43cE         4         27,940         14         966           44nE         3         27,186         14         966           44hE         3         27,186         14         966           47jE         2         24,707         13         897           47kE         2         24,707         13         897 <td>  No. of   No. of   Flights   Ast   Space   Space   Space   Space   No. of   Flights   Ast   Space   Space   Space   Space   No. of   Flights   Ast   Space   Space  </td> <td>  No. of   Servicing   Mass for   16 Year   No. of   No.</td> <td>  Set   No. of   Servicing   Mass for   16 Year   Mass for   Flight   Mass for   Mass for</td>	No. of   No. of   Flights   Ast   Space   Space   Space   Space   No. of   Flights   Ast   Space   Space   Space   Space   No. of   Flights   Ast   Space   Space	No. of   Servicing   Mass for   16 Year   No. of   No.	Set   No. of   Servicing   Mass for   16 Year   Mass for   Flight   Mass for   Mass for

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused; \$32M expended.

<sup>2.</sup> Partial flights rounded up to next integer or to 7, whichever is higher.

<sup>3.</sup> Each platform serviced seven times.

<sup>( ) =</sup> Lowest cost

Table H-7. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-1 Reusable OTV and RTS)

					TG OTV		TG OTV Mated	(1) 2 S' Space	rg orv Mated
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 1169 kg per Flight	Cost at 39 \$M per Flight, \$M	No. of Flights at 2474 kg per Flight	Cost at 80 \$M per Flight, \$M	No. of Flights st 13,686 kg per Flight	Cost at 126 \$M per Flight, \$M
73	60bC'	34	38,068	33	1,287	16	1,280	3	(378)
75	62cC'	26	33,753	29	1,131	14	1,120	3	(378)
76	63dC'	20	30,996	27	1,053	13	1,040	3	(378)
77	64gC'	14	30,260	26	1,014	13	1,040	3	(378)
79	661C'	7	27,154	24	936	11	880	2	(252)
82	69mC'	4	26,149	23	897	11	880	2	(252)
101	61pC'	33	43,144	37	1,443	18	1,440	4	(504)
126	65nC'	12	33,117	29	1,131	14	1,120	3	(378)
87	74aC'	145	95,852	82	3,198	39	3,120	7	(882)
91	78qC'	87	71,118	61	2,379	29	2,320	6	(756)
100	86rC'	47	51,082	44	1,716	21	1,680	4	(504)
104	88fC'	29	40,116	35	1,365	17	1,360	3	(378)
110	91eC'	24	37,070	32	1,248	15	1,200	3	(378)
111	92vC'	23	38,568	33	1,287	16	1,280	3	(378)
121	94oC'	17	36,167	31	1,209	15	1,200	3	(378)
129	96hC'	12	31,489	27	1,053	13	1,040	3	(378)
137	66jC'	7	25,520	22	858	11	880	2	(252)
142	99kC'	5	29,553	26	1,014	12	960	3	(378)

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused.

<sup>2.</sup> Partial flights rounded up to next integer.

<sup>3.</sup> Each platform serviced once.

<sup>( ) =</sup> Lowest cost

Table H-8. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-2 OTV and RTS Expended)

						(111000										
					an american suger		(r') Cu	ntaur	(f) I	vro	(e) 1 ST Ground	G OTV	(h) 1 S Space	TG OTV Mated	Space	TG OTV
				Total	(r) Ce Ground No. of Flights	Mated Cost at	Ground No. of Flights	Mated Cost at	Ground No. of Flights	Cost at	No. of Flights	Cost at	No. of Flights at	Cost ut	No. of Flights at	Cost ut
				Servicing Mass for 16 Year	at 3663 kg per	94 \$M per Flight,	at 3663 kg per	82 \$M per Flight,	at 4873 kg per	91 \$M per Flight,	5629 kg per Flight	per Flight,	9975 kg per Flight	per Flight, \$M	per Flight	Flight,
	Item No.	Set No.	No. of Platforms	Mission,	Flight	\$M	Flight	\$M	Flight	728	7	693	4	560	2	(432)
-	73	60₽C'	34	38,068	11	1.034	11	902 820	8 7	637	6	594	4	560	3	(432) (432)
	75	62cC*	26	33,753	10	940 846	10 9	736	7	637	6	594	4	560 (420)	2 2	432
	76	63dC1	20	30,996 30,260	9	846	9	738	7	637	6	594 495	3	(420)	2	432
	77	64gC' 661C'	14	27,154	8	752	8	656	6	546 546	5 5	495	3	(420)	2	432
	79 62	69mC1	4	26,149	8	752	8	656 984	6 9	819	8	792	5	700	2 2	(432) (432)
	101	61pC'	33	43,144	12	1,126 846	12 9	738	7	637	6	594	4 10	560 1,400	5	(1,080)
H	126	65nC'	12 145	33,117 95,852	9 27	2,538	27	2,214	20	1,820	17 13	1,683	8	1,120	4	(864)
-11	67 91	74aC' 78qC'	143 87	71.118	20	1,880	20	1,640	15 11	1,365 1,001	13	891	6	840	3	(648) (432)
•	100	SerC'	47	51,082		1,316	14 11	1,148 902	9	819	8	792	4	560 560	2	(432)
	104	88fC'	29	40,116 37,070		1,034 1,034	11	902	8	728	7	693 693	4	560	2	(432)
	110	91eC' 92vC'	24 23	38,568		1,034	11	902	8	728 728	7 7	693	4	560	2	(432)
	111 121	94oC'	17	36,16	7 10	940	10	820 738	8 7	637	6	594	4	560	_	(432) (432)
	129	96hC1		31,48	_	84 <b>6</b> 658	9 7	574	6	546	5	495	3	(420 (420	,	
	137	<b>66</b> (C'	7	25,52 29,55	•	752	8	656	6	546	6	594		(,,,,	•	
	142	9:kC	5	29,50					 .a							

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$32M expended.

<sup>2.</sup> Partial flight rounded up to next integer.

<sup>3.</sup> Each platform serviced once.

<sup>( ) =</sup> Lowest cost

Table H-9. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-3 OTV Reusable/RTS Expended)

	-	1	1	(q) OTV Ground			Reusable Mated	(1) 2 ST( Reuse - Spage	ble
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 2038 kg per Flight	Cost at 69 \$M per Flight, \$M	No. of Flights at 4041 kg per Flight	Cost at 110 \$M per Flight, \$M	No. of Flights at 15,381 kg per Flight	Cost ut 156 \$M per Flight, \$M
73	60bC'	34	38,068	19	1,311	10	1,100	3	(468)
75	62eC'	26	33,753	17	1,173	9	990	3	(458)
76	63dC'	20	30,996	16	1,104	8	880	2	(312)
77	64gC1	14	30,260	15	1,035	8	880	2	(312)
79	661C'	7	27,154	14	966	7	770	2	(312)
82	69mC1	4	26,149	13	897	7	770	2	(312)
101	61pC'	33	43,144	22	1,518	11	1,210	3	(468)
126	65nC'	12	33,117	17	1,173	9	990	3	(468)
87	74uC'	145	95,852	47	3,243	24	2,640	7	(1,092)
91	78qC'	87	71,118	35	2,415	18	1,980	5	(780)
100	86rC'	47	51.082	25	1,725	13	1,430	4	(624)
104	88fC'	29	40,116	20	1,380	10	1,100	3	(468)
110	91eC'	24	37,070	19	1,311	10	1,100	3	(468)
111	92vC'	23	38,568	19	1,311	10	1,100	3	(468)
121	94oC'	17	36,167	18	1,242	9	990	3	(468)
121	96hC'	12	31,489	16	1,104	8	880	2	(312)
137	66jC'	7	25,520	13	897	7	770	2	(312)
142	99kC'	5	29,553	15	1,035	8	880	2	(312)

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$32M expended.

<sup>2.</sup> Partial flights rounded up to next integer.

<sup>3.</sup> Each platform serviced once.

<sup>( ) =</sup> Lowest cost

Table H-10. Servicing Flight Costs - Mode E - Mission Set V (Mode S-1 Reusable OTV and RTS)

				(q) 1 STG OTV Ground Mated			TG OTV Mated	(1) 2 STG OTV Space Mated		
Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights - at 1169 kg per Flight	Cost at 39 \$M per Flight, \$M	No. of Flights at 2474 kg per Flight	Cost at 80 \$M per Flight, \$M	No. of Flights at 13,696 kg per Flight	Cost at 126 \$M per Flight, \$M	
84	70mE	3	73,703	63	2,457	30	2,400	7	(882)	
106	62bE	26	99,197	85	3,315	40	3,200	8	(1,008)	
114	63cE	20	92,400	79	3,081	38	3,040	7	(882)	
144	100kE	4	87,502	75	2,925	36	2,880	7	(882)	
141	581E	6	87,649	75	2,925	36	2,880	7	(882)	
89	764E	95	211,700	181	7,059	86	6,880	. 16	(2,016)	
95	81qE	62	169,087	145	5,655	69	ā,520	13	(1,638)	
103	87rE	30	118,599	102	3,978	48	3,840	9	(1,134)	
107	90pE	25	107,736	93	3,627	44	3,520	8	(1,008)	
115	63fE	20	100,606	86	3,354	41	3,280	8	(1,008)	
119	94eE	17	104,809	90	3,510	43	3,440	8	(1,008)	
122	95dE	16	98,069	84	3,276	40	3,200	8	(1,008)	
123	95vE	16	103,957	89	3,471	42	3,360	8	(1,008)	
127	65oE	12	93,370	80	3,120	38	3,040	7	(882)	
130	96gE	12	94,550	81	3,159	39	3,120	7	(882)	
134	98nE	9	89,603	77	3,003	37	2,960	7	(882)	
136	98hE	9	86,822	75	2,925	35	2,800	7	(882)	
140	68jE	6	86,732	75	2,925	35	2,800	7	(882)	

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$2M reused.

<sup>2.</sup> Partial flights rounded up to next integer or to 7, whichever is higher.

<sup>3.</sup> Each platform serviced seven times.

<sup>( ) =</sup> Lowest cost

Table H-11. Servicing Flight Costs - Mode E - Mission Set V (Mode S-2 OTV and RTS Expended)

						entsur 1 Mated		Centaur d Mated		IOTV d Mated	(e) 1 ST Ground		(n) 1 S Space	TG OTV	(m) 2 ST Space	G OTV Mated
	Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	No. of Flights at 3663 kg per Flight	Cost at 94 \$M per Flight, \$M	No. of Flights at 3663 kg per Flight	Cost at 84 SM per Flight, SM	No. of Flights at 4873 kg per Flight	Cost at 91 \$M per Flight, \$M	No. of Flights at 5629 kg per Flight	Cost at 99 \$M per Flight, \$M	No. of Flights at 9975 kg per Flight	Cost at 140 SM per Flight, SM	No. of Flights at 22,336 kg per Flight	Cost at 216 SM per Flight, SM
	84	79mE	3	73,703	21	1,974	21	1,722	16	1,456	13	1,287	8	(1,120)	7	1,512
	106	62bE	26	99,197	27	2,538	27	2,214	21	1,911	18	1,782	10	(1,406)	7	1,512
	114	63cE	20	92,400	26	2,444	26	2,132	19	1.729	17	1,683	10	(1,400)	7	1,512
	144	100kE	4	87,502	24	2,256	24	1,968	18	1,638	16	1,504	8	(1,120)	7	1,512
	141	681E	6	87,649	24	2,256	24	1,960	18	1,638	16	1,584	9	(1,260)	7	1,512
	89	76nE	95	211,700	58	5,452	58	4,756	44	4,004	38	3,762	22	3,030	10	(2,160)
	95	81qE	62	169,087	47	4,418	47	3,854	35	3, 485	30	2,970	17	2,380	8	(1,728)
Τ*	103	87rE	30	118,599	33	3,102	33	2,706	25	2,275	21	2,079	12	1,680	7	(1,512)
<u>.</u>	107	90pE	25	107,736	30	2,820	30	2,460	23	2,093	20	1,980	11	1,540	7	(1,512)
<u>-</u>	115	63fE	20	100,606	28	2,632	28	2,296	21	1,911	18	1,782	10	(1,400)	7	1,512
	119	94eE	17	104,809	29	2,726	29	2,378	22	2,002	19	1,681	11	1,540	7	(1,512)
	122	95/iE	16	98,069	27	2,538	27	2,214	21	1,911	18	1,782	10	(1,400)	7	1,512
	123	95vE	16	103,957	29	2,726	29	2,378	22	2,002	19	1,881	11	1,540	7	(1,512)
	127	650E	12	93,370	26	2,444	26	2,132	20	1,820	17	1,683	10	(1,400)	7	1,512
	130	96gE	12	94,550	26	2,444	26	2,132	20	1,820	17	1,683	10	(1,400)	7	1,512
	134	98nE	9	89,603	25	2,350	25	2,050	19	1,729	16	1,584	9	(1,260)	7	1,512
	136	98hE	8	86,822	24	2,256	24	1,968	18	1,638	16	1.584	9	(1,260)		1,512
	140	64jE	6	86,732	24	2,256	24	1,968	18	1,638	16	1,584	9	(1,2 <del>60</del> )	7	1,512

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$32M expended.

<sup>2.</sup> Partiel flight rounded up to next integer or to 7, whichever is higher

<sup>3.</sup> Each platform serviced seven times.

Table H-12. Servicing Flight Costs - Mode E - Mission Set V (Mode S-3 OTV Reusable/RTS Expended)

	<del>-</del> · · · ·			Ground	Reusable   Mated	1	Reusable Mated	(1) 2 ST Reus Space	able
;			Total Servicing Mass for 16 Year	No. of Flights at 2038	Cost at	No. of Flights at 4041 kg	Cost at	No. of Flights at 15,381 kg	Cost at 156 \$M
Item	Set	No. of	Mission.	per	per Flight,	per	per Flight,	per	per Flight,
No.	No.	Platforms	kg	Flight	\$M	Flight	\$M	Flight	\$M
		-			•			_	
84	70mE	3	73,703	37	2,553	19	2,090	7	(1,092)
106	62bE	26	99,197	49	3,381	25	2,750	7	(1,092)
114	63cE	20	92,400	46	3,174	23	2,530	7	(1,092)
144	100kE	4	87,502	43	2,967	22	2,460	6	(936)
141	681E	6	87,649	43	2,967	22	2,460	6	(936)
89	76aE	95	211,700	104	7,176	53	5.830	14	(2,184)
95	81qE	62	169,087	83	5,727	42	4,620	11	(1,716)
103	87rE	30	118,599	59	4.071	30	3,300	8	(1,248)
107	90pE	25	107,736	53	3,657	27	2,970	7	(1,092)
115	63fE	20	100,606	50	3,450	25	2,750	7	(1,092)
119	94eE	17	104,809	52	3,588	26	2,860	7	(1,092)
			-		•			7	(1,092)
122	95dE	16	98,069	49	3,381	25	2,750	-	• • •
123	95vE	16	103,957	51	3,519	26	2,860	7	(1,092)
127	65oE	12	93,370	46	3,174	24	2,640	. 7	(1,092)
130	96gE	12	94,550	47	3,243	24	2,640	7	(1,092)
134	98nE	9	89,603	44	3,036	23	2,530	7	(1,092)
136	98hE	9	86,822	43	2,967	22	2,420	7	(1,092)
140	68jE	6	86,732	43	2,967	22	2,420	7	(1,092)

Notes: 1. Costs in 1980 dollars for transportation and RTS at \$32M expended.

<sup>2.</sup> Partial flights rounded up to next integer or to 7, whichever is higher.

<sup>3.</sup> Each platform serviced sevent imes.

<sup>( ) =</sup> Lowest cost

## APPENDIX I GEOSTATIONARY PLATFORM COST MODEL RUNS

#### APPENDIX I

#### GEOSTATIONARY PLATFORM COST MODEL RUNS

Platform bus development and production costs were estimated using Convair's computerized life cycle cost model. Table I-1 is a sample cost model input sheet for Items 122 and 123. Inputs to the model are the operational life, number of units produced, and subsystem descriptions developed using the platform synthesis model (Ref. Appendix G).

The cost model output data sheets for Items 1-144 are included in Tables I-2 and I-3. The costs are itemized as follows:

Column 1	Development costs
Column 2	Theoretical first unit costs
Column 3	Production costs for n units
Column 4	Total development and production costs

The cost model is discussed in detail in Volume III.

Table I-1. Sample Cost Model Inpu Sheet

```
CASED ITEM-122 . BUS TYPE-95 DE BCASE- II
       . TAPE 2 300
     $ 5 1 TE
Atpains C PAI STR - SECOUDIARY -- TUSTIFIC CONT FCS (AVICALES) ACS (AXCE)
                          360x = 216. 3603 = 201.
               , A 01 = 331.
                                                 3404= 242.
     A00= 3314.
dn+2 -> ---
1A01 = 923. 1A09 = 219.
               3 A O 6 = _ 24.
                          1 A 07 = 20.
     A05= 235.
ant } -
FINA ) C APRDET (AVI) DOCK (MECH) PRODUTTS FACHITICS
                         3A12= 16.
                                      3 A 13 = 16 404.
     A10= 312.
               1A11= 882.
CASETS ITEM-13 + BUS TYPE- 95VE BOASE- TIT
       . TAPE 2 300
     $5125
Attended to PAttent STR - ..... THERITAL THERITAL TOOM TO MACE (AVIITALITE STATES - CANACA)
     A00= 5487. 3401= 331. 3402= 214.
                                     3A03= 225. 3A04= 320.
dn+}→ €-
A05= 270.
                                      AOT = 924.
                                                3A09= 249.
               3 A O 6 = 24. 3 A O7 = 20.
dmt 7 c'
A10= 312. 5A11= 882. 5A12= 16. 5A13= 18 863.
```

Table I-2. Nominal Traffic Model Cost Runs

SYSTEM LIFE UNITS PHODUCED A6-00 67-00

			12.25.31.	01/21/80
ITE	ITEM I BUS TVOF SIAC	C CASE 11		
GFOSTATIONARY PLATFORM PROGRAM COSTS (1)	(19808#)			
	POTEE PHASE CCST	FIAST	PAGO PHASE COST	ROTGE PLUS PRG0
1.1. GEOPLATFORM (BUS) -TOTAL	124.12	20.85	1023.31	1147.43
1.1.1. STANCIUS?	6.78	.72	35.26	
STRUCTURE	o ( • • • • • • • • • • • • • • • • • •	20.	24.04 24.04 24.04	
1.1.1.2. TTFUCTURE (SECHNORRY) 1.1.1.3. STRUCTURE (TOOLING)	62.	•	•	
1.1.2. THERMAL CONTROL	2.75	56.	16-31	
CONTROL ATTITUDE CONTROL	23.13	3.20	156.93	
1.1.7.1. ATTITUDE CONTACT (AVIOUES)	24.23	2.04	アナ サ・・ ・ ・ ・ ・	
1.1.4. AFACTIUN CONTROL	61°#1	3.67	163.21	
	7.73	4.45	216-59	-
Notes to the Control of the Control	3.89	3.42	161.91	
	• 36	77.	13.17	
1.1.*.3. POWER COND & DIST	3.03	•		
1.1.6. TTE	3.54	3.40	166.59	
1.1.7. REHDEZYGUS F DCCKING 1.1.7.1. PSEDFZYGUS (AVIOVICS) 1.1.7.2. DCCKING (MECHANICAL)				
1.1.". IMTEGRATION, ASSEMBLY, R C/D		1.95	95.64	
1.1.9. PROSRAY PANASEMENT	5.45	1.30	63.76	•
1.1.10. SYSTEMS GNGRG & INTEGRATION	12.49	4.36	66.95	
I. I. II. SYSTEMS TEST ARTICLS	13.19			
1.11.12. SYSTEW FEST OFFBRITINS	0.8.0			
1.1.13. 675	7.37			
1.1.14. FSE				
1.1.15. FACILITIES	2°04			

Table I-2. Nominal Traffic Model Cost Runs, Contd \$45754 LIFE; UNITS PRODUCED 16.30 37.00

			72.25.31.	01/21/80
11	EM 2 BUS TYPE 31	0C CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS ()	697447			
Attigration Features to Angelia Control			** · **	
	₹376F E24Fq	FIFST Unit	PHOD PHASE	RDT&E Plus
	COST	C35T	COST	PEGD
1.1. GSOPLATFORM (BUS) -TOTAL	135.50	25.33	753.34	868.85
1.1.1. \$100CTURE	.7.93	1.17	34.61	
1.1.1.1. STRUCTURE ( PRIMARY)	5.21	1.00	31.44	
1.1.1.2. STRUCTUPE (SECONDARY)	2.33	•11	3.37	
1.1.1.3. STRUCTUPE (TOOLING)	•39			
1.1.7. THE PPAL CONTROL	2.77	•49	11.96	
1.1.3. ATTITUDE CONTROL	29.78	3.61	107.46	
1.1.7.1. ATTITUDE CONTROL (AVIONICS)	24.76	2.35	70.68	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.01	1.74	30.78	
1.1.4. REACTION CONTROL	61.91	4.65	150.17	
1.1.5. ELECTRICAL POWER	8.61	5.47	162.54	·
1.1.5.1. SOLAR ARDAY	4.50	4.14	123.02	
1.1.5.7. #ATTLPICS 1.1.5.3. PONER COND & DIST	.37 3.74	• 36 • 97	10.64 20.68	
1010 030 FIRST COMO 9 0131				
1.1.6. 1750	9.60	4.43	131.76	
1.1.7. RENDEZVOUS E DECKING				
1.1.7.1. RENDEZVOUS (AVICNICS)				
1.1.7.7. OSCHING EMECHANICALI		-		
1.1.5. INTEGRATION. ASSEMBLY, & C/O		2.37	70.41	
1.1.4. PROSEAR MANAGEMENT	5.74	1.50	46.94	
1.1.10. SYTTEMS ENGRG & INTEGRATION	11.65	1.66	49.28	
1.1.11. SYTTEMS TEST ARTICLE	22.10			
1.1.17. SYSTEM TOST OPERATIONS	5.47			
1.1.13. 651	7.1			
1.1.14. FTF				
1.1.15. FACILITIES	2.45			

Table I-2. Nominal Traffic Model Cost Runs, Contd

	ITAM 2 BUS BUS		12.25.31.	01/21/8
GEOSTATIONARY PLATFORM PROGRAM COST	TEN 3 BUS TVOE 5:	54C. CV7F 11		
	RO TEE	• *		
	PHASE	FIRST	PRUD	ROTEE
	COST	UNIT	PHASE	PLUS
1.1. GEOPLATECAN (PUS) -TOTAL		COST	COST	PKUD
1.01.40	470.eo	28.47		7.00
1.1.1. STOUCTURE		20.97	696.58	867.38
le le le le CTRUCTURE ARRENANTA	7.52	• 40	_	001030
	4.7u	• 7 6	21.62	
1.1.1.3. STRUCTURE CTUBLING)	2.49	•12	16.67	•
	•27	• 1 €	2.46	
1.1.2. THERMAL CONTROL				
•	2.7e	• 41		
1-1-3- ATTITION CONTACE		• • •	7.60	
1.1.3.7. ATTITUD: CONTROL CAVIONICS)	49.27	3.28	34 4.	
1.1.3.2. ATTITUDE CONTROL TAVIONICS)	28.34	<.11	73.96	
	•93	1.16	50.62 28.34	
1.1.4. REACTION CURTS OF			20,34	
1.1 K. Creaker	10.50	2.22	53.40	
1.1.4. SECUTIONAL POWER 1.1.5.1. SCIME ARRAY	47.24		23.40	
1.1.5.2. PATTISTIC	6.11	4.32	200.16	
Talaba and an analysis	•37	6.17	140.31	
tologodo Admie Cand Colet	>.5>	•53	45.05	
1.1.A. TYCC	2.77	1.53	30.40	
	9.45			
lala 7. Revectus a a a .	7 • 7 7	4.56	109.57	
1.1.7. RENDEZVOUS & SCOKING	23.92			
1.1.7.1. PINDETVOUS (AVIONICS)	17.35	2.67	69.69	
I.1.7.2. TOOKING CHECHANICALD	4.56	2.30	55.40	•
Alada turecharen	4.70	•>7	13.59	
.1.d. INTEGRATION, ASSEMBLY, & C/O				
.1.4. PERGRAM MANASEMENT		2.71	65.10	
A STANKA MENERAL MANAGEMENT	7.52			
alall, tytres cuas	•• > 2	1.01	43.40	·
.1.17. SYTTEMS ENGRG & INTEGRATION	17.79			
. 1.11. SYSTEMS TEST ARTICLE		1.90	45.57	
	45.27			
1.17. SYSTEM TEST CORRATIONS				
	6.74			
1.13, gep				
	19.15			
1.14. FCF	<u>-</u> ·			
1.15. FACILITIES				
·	2.17			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/00
	11EM 4 BUS (YPE 32	RC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COST	(1980\$n)			
	. KOTEE	FIRST	PROD	ADTGE
	PHASE	UNIT	PHASE	PLUS
	COST	C 0 2 1	1200	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	155.17	33.05	641.56	847.73
1.1.1. STRUCTURE	9.39	1.61	37.03	
1.1.1.1. STRUCTURE (PRIMARY)	5.71	1.67	34.13	
1.1.1.2. STRUCTURE (SECONDARY)	2.76	-14	2.91	
1.1.1.3. STEUCTURE (TOOLING)	.71			
1.1.2. THEPHAL CONTROL	2.01	.42	6.57	
1.1.3. ATTITUDE CONTROL	30.45	4.42	90.23	
1.1.3.1. ATTITUDE CUNTROL (AVIONICS)	29.66	3.66	62.54	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.19	1.35	27.60	
1.1.4. REACTION CONTROL	27.61	6.45	131.72	
1.1.5. ELSCIRICAL POWER				
1.1.5.1. SOLAR APRAY	11.99	6.31	169.71	
1.1.5.2. MATTERIES	6.11	0.17	120.02	
1.1.5.3. PCHER COND & DIST	.39	.63	12.79	
TOTAL COME & DIST	5.49	1.51	30.90	
1.1.6. 1760	10.00	4.96	101.33	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.2. INTEGRATION, ASSEMBLY, & C/O		3.16	64.63	
1.1.9. PRIGRAY MANAGEMENT	5.34	2.11	43.09	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.23			
	14.73	2.21	45.24	
1.1.11. SYSTEMS TEST ARTICLE	25.53			
1.1.12. SASIEM LEST DECEMBLICAS	7.31			
1.1.13. 655	4.47			
1.1.1.4. FSF				
1.1.15. FACILITIES	3.90			

Table 1-2. Nominal Traffic Model Cost Runs. Contd

			12.25.31.	2/10
17	ITEN 4 BUS LYPE 321	328C C4SE 11		
GFOTTATIONARY PLATFORM PROGRAM COSTS (1	( TARCEY)			
	PANSE CUST	#1#51 CNIT CC>1	PROU	4016 9105
1.1. GEOPLATFORM (BUS) -TOTAL	1:5:17	33.05	641.56	947,73
2.1.1. CTRUCTURE	02.0	14.1	20 62	•
STAUCTORE	5.01	7997	36.13	
<pre>1.1.1.7. fff(CTURE (SECONDARY) 1.1.1.3. Stf(CTURE (TOOLING)</pre>	2.76	• 1 •	2.91	
1.1.7. THEBPAL CONTROL	1 ú • 2	. • •	8.57	
I.S.P. ATTITUTE CONTROL	30.44	67.43		
.1.3.1. ATTITUD	94.55	3.0	62.54	
	•	1.35	27.60	
1.1.4. REACTION CONTROL	27.41	6.45	131.72	
	•			
,	6-11	71.0	159.71	
2 10 11 V	.33	.63	12.79	
Talle Sede Por Bally Cond & DIST	7 · ·	1441	30.00	
1.1.6. TTGC	06*61	96.4	101.33	
1.1.7. Printzuous & Docking 1.1.7.1. Pendryvous (Aviovics) 1.1.7.2. Offeing (Peghanical)				
1.1.e. INTEGRATIONS ASSEMBLYS & C/O		3.16	64.63	
WEULLOUPERS PESUDES OF OHER	5.34	2.11	43.09	
Lelelde Systems Chicke & Interantion	14.03	2.21	45,24	
Islalls SYSTLMS FEST APPICLE	25.043			
I. I. I. CYSTEM TEST OFFRATICAS	7.31			
• • ¹• 65F	4.67			
Islabs Feculatics	j. • m			

1.1.14. FSF

1.1.15. FACILITIES

Table I-2. Nominal Traffic Model Cost Runs, Contd

Table 1-2.		<b></b>		
SYSTEM LIFE; UNITS PRODUCED	16.00 15.00			
SAZIEM FILE! OUTL: LEGORGE				241 221 22
			12.25.31.	01/21/60
		CASE II		
	ITEM 5 BUS TYPE 334E	C436 **		
17202 H 4002 C	(19605#)			
GEOSTATIONARY PLATFORM PROGRAM COSTS	(11000)		2000	ROTAE
	KOTEE	FIRST	PROD	PLUS
	PHASE	UNLT	PHASE	PROD
	LOST	COST	COST	7 1.00
			336.27	506.30
LATOTAL	109.03	27.56	33012	
1.1. GEOPLATFORM (BUS) -TOTAL			13.60	
	€.31	1.11	11.73	
1.1.1. STRUCTURE	5.06	. 46	1.67	
CTDIICTIIRE (PKINA")	2.90	.15	1.01	
CIPHCIHE (SECTIMENT)	.35			
1.1.1.3. STRUCTURE (TOOLING)	<u> </u>		4.79	
	2.74	.39	4.74	
1.1.2. THERMAL CONTROL				
	28.85	3.04	37.33	
1.1.3. ATTITUDE CONTROL	27.93	1.87	22.91	
ATTITION CONTROL (AVIOLOS)	.92	1.17	14.42	
1.1.3.2. ATTITUDE CONTROL (AMCD)	• 72			
	13.64	1.01	12.37	7
1.1.4. REACTION CONTROL	1,000			
1.1	12.16	€.36	102.64	
1.1.5. ELECTRICAL FOWER		0.17	7>.72	
1.1.5.1. SOLAR ARRAY	6.11	03	7.68	
1.1 2. SATTERIES	. 39	1.57	19.23	
1.1.5.3. POWER COND & DIST	5.66			
1.1.5.1. Pourk Comp a		4.43	54.40	
	9.90	4.15		
1.1.5. TTEC		3.12	30.34	
COUNTING	25.24	2.34	28.66	
1.1.7. RENDEZVOUS & DOCKING	19.40		9.66	
1.1.7.1. RENDEZ VOUS (AVIONICS)	5.84	.79	,,,,,	
1.1.7.2. DOCKING (MECHANICAL)			31.61	
ACCEMBLY. C CID		2.58	31.02	
1.1.8. INTEGRATION, ASSEMBLY, & C/O			21.08	
	7.45	1.72	21.00	
1.1.9. POTGRAM MANAGEMENT			22.13	
	17.62	1.50	22.13	
1.1.10. SYSTEMS ENGRG & INTEGRATION	.,			
	24.04			
1.1.11. SYSTEMS TEST ARTICLE	24.07.			
	5.95			
1.1.12. SYSTEM TEST OPERATIONS	2.4			
1010120 31	12.27			
1.1.13. 655	13.77			

2.16

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/8
	TEM 6 BUS TYPE 33	KC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	1980SM)			
	ROTEE	FIFST	PROD	RDTEE
	PHASE	INI	PHASE	PLUS
	1200	C 0 7 1	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	155.16	34.71	533.37	668.53
1.1.1. STPUCTURE	9.57	1.67	28.62	
1.1.1.1. STPUCTURE (PPIMARY)	5.97	1.72	26.34	
1.1.1.2. STRUCTURE (SECONDARY)	2.96	. 15	2.28	
1.1.1.3. STRUCTURE (TOOLING)	.74			
1.1.2. THERMAL CONTROL	2.03	•43	6.54	
1.1.3. ATTITUDE CONTROL	31.00	4.53	69.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.79	3.16	48.29	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.22	1.37	20.53	
1.1.4. PEACTION CONTACL	20 . 5 3	6.75	103.15	
1.1.5. ELECTRICAL POWER .	12.00	8.31	127.00	
1.1.5.1. SOLAR ARRAY	6.11	6.17	94.25	
1.1.5.2. RATTERIES .	.39	.63	9.57	
1.1.5.3. POWER COND & DIST	5.*0	1.52	23.18	
1.1.6. TTEC	10.06	5.14	76.49	
1.1.7. PENDEZVOUS & DOCKING			9	
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.9. INTEGRATION, ASSEMBLY, & C/O		3.24	49.57	
1.1.9. PPOGRAM MANAGEMENT	6.39	2.16	33.04	
1.1.10. TYSTEMS ENGRG & INTEGRATION	15.09	2.27	34.70	
1.1.11. SYSTEMS TEST ARTICLE	30.29			
1.1.12. SYSTEM TEST OPERATIONS	7.49			
1.1.13. 655	9.63			
1.1.14. 5*5				
1.1.15. FACILITIES	1.94			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

16.00 19.00

			12.25.31.	01/21/80
	ITEM 7 BUS TYPE 33	OC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980SM)			
	ROTEE PHASE	FIRST	PROD PHASE	RDT EE PLUS
	COST	COST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	179.43	31.95	488.22	667.70
1.1.1. STOUCTURE	6.90	1.42	21.70	
1.1.1.1. STRUCTURE (PRIMARY)	5.47	1.27	19.35	
1.1.1.2. STPUCTUPE (SECONDARY)	2.9?	•15	2.35	
1.1.1.3. STRUCTURE (TOOLING)	.50			
1.1.2. THERMAL CONTROL	2.13	.43	6.54	
1.1.3. ATTITUDE CONTROL	29.98	3.75	57.37	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	26.43	2.49	30.11	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.75	1.26	19.26	
1.1.4. REACTION CONTROL	17.19	2.05	43.60	
1.1.5. FLECTRICAL POWER	12.17	P.37	127.62	
1.1.5.1. SOLAS ARRAY	6.11	0.17	94.25	
1.1.5.2. 9ATT-PIES	.39	.63	9.57	
1.1.5.3. POWER COND & DIST	5.67	1.57	24.01	
1.1.5. TT60	10.06	2.14	78.49	
1.1.7. RENDEZVOUS & DOCKING	24.03	2.43	44.71	
1.1.7.1. RENJEZVOUS (AVIONICS)	19.4?	2.35	35.94	
1.1.7.2. ONCKING (MECHANICAL)	4.61	.57	8.77	
1.1.4. INTEGRATION, ASSEMBLY, & C/O		2.97	45.63	
1.1.9. PROGRAM MANAGEMENT	7.78	1.99	30.42	* ,
1.1.17. SYSTEMS ENGRG & INTEGRATION	19.39	2.09	31.94	
1.1.11. SYSTEMS TEST ARTICLE	27.47			
1.1.12. SYSTEM TEST OPERATIONS	6.30			
1.1.13. Gef	10.52			
1.1.14. FSF				
1.1.15. FACILITIES	2.45			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			11 41.30.	01/21/80
	ITEM 6 BUS TYPE 34	AB CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980SM)			
	RDTEE PHASE CUST	FIRST Unit Cost	PROD PHASE COST	RDT &E PLUS PRUD
1.1. GEOPLATFORM (BUS) -TOTAL	112.12	22.30	554.27	666.39
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PPIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	3.08 3.08	1.20	29.75 25.66 4.07	
1.1.2. THERMAL CONTROL	2.68	.37	9.07	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	22.76 22.03 .74	2.56 1.51 1.07	63.78 37.34 26.44	
1.1.4. REACTION CONTROL	13.01	2.02	49.99	
1.1.5. FLECTPICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. RATTERIES 1.1.5.3. POWER COND & DIST	9.65 4.89 .31 4.45	7.57 5.61 .57 1.40	187.50 138.65 14.09 34.56	
1.1.5. TTFC	7.74	3.75	92.94	
1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)		_		
1.1.4. INTEGRATION, ASSEMBLY, & C/O		2.10	51.96	
1.1.9. PROGRAM MANAGEMENT	4.77	1.40	34.64	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.25	1.40	34.64	
1.1.11. SYSTEMS TEST ARTICLE	19.59			
1.1.12. SYSTEM TEST OPERATIONS	4.41			
1.1.13. 535	6.45	*		
1.1.14. FSF				
1.1.15. FACILITIES	2.17			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

			12.25.31.	01/21/60
1	TEM 9 BUS TYPE 348	C CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS (	1+60sm)			
	RDTEE	FIRST	PROD	ROTEE
	PHASE	UNIT	PHASE	PRUS
	LOST	CDST	COST	PROD
1.1. GENPLATEUPH (BUS) -TOTAL	154.24	33.17	432.23	586.47
1.1.1. STRUCTURE	5.67	1.21	12.72	
1.1.1.1. STRUCTURE (PRIMARY)	5.10	1.04	13.56	
1.1.1.2. STRUCTURE (SECONDARY)	3.10	.17	2.16	
1.1.1.3. STRUCTURE (TOOLING)	.39			
1.1.2. THERMAL CUATROL	2.35	.44	5.69	
1.1.3. ATTITUDE CONTROL	30.72	4.30	50.08	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.54	2.96	38 60	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.17	1.34	17.47	
1.1.4. REACTION CONTROL	20.44	6.21	eu.91	
1.1.5. FLECTRICAL POWER	12.09	0.34	108.67	
1.1.5.1. SCLAR ARRAY	5.11	0.17	bC.36	
1.1.5.2. AATTERIES .	.37	.03	0.16	
1.1.5.3. POWER COND & DIST	5.59	1.54	20.12	
1.1.5. TTEC	10.13	5.34	64.57	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.4. INTEGRATION, ASSEMBLY, & C/O		3.10	40.40	
1.1.9. PROSPAM MANAGEMENT	6.29	2.07	26.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.95	2.17	28.28	
1.1.11. SYSTEMS TEST ARTICLE	25.93			
1.1.12. SAZIEM LEZI OBERATIONE	7.15			
1.1.13. GSE	40			
1.1.14. FSF				
1.1.15. FACILITIES	3.64			

16.06 15.72

			12.25.31.	01/21/80
11	TEM TO PRE 34	FC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS (	1986SM)			
	. ROTES	FIRST	PROD	ROTEE
	P44SE COST	UNIT	PHASE COST	PLUS PRGD
1.1. GEOPLATFORM (BUS) -TOTAL	161.63	36.12	470.70	632.33
				******
.1.1. STRUCTURE	10.00	2.02	26.31	
1.1.1.1. STRUCTURE (PRIMARY)	6.09	1.65	24.15	
I.l.l.z. STRUCTURE (SECONDARY) I.l.z. STRUCTURE (TOOLING)	3.10 .91	.17	2.16	
	• • •			
1.1.2. THEPMAL CONTROL	2.85	.44	5.69	
1.1.3. ATTITUD- CONTROL	31.26	4.76	62.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.00	3.36	43.77	
1.1.3.2. ATTITUDE CUNTROL (AMCD)	1.25	1.40	18.23	
1.1.4. REACTION CONTROL	21.15	7.24	94.29	
1.1.5. FLECTRICAL POWER	12.10	8.34	108.73	
1.1.5.1. SOLAR AWRAY	6.11	6.17	80.38	
1.1.5.2. BATTERISS .	. 3 9	.63	8.16	
1.1.5.3. POWER COND & DIST	5.60	1.55	20.18	
1.1.5. TTEC	10.13	5.34	69.57	
1.1.7. RENDLZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.30	43.99	
1.1.9. PPOGRAM MANAGEMENT	6.47	2.25	29-33	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.30	2.30	30 74	
1.1.11. SYSTEMS TEST ARTICLE	31.51			
1.1.12. SYSTEM TEST OPERATIONS	7.90			
1.1.13. GSS	2.75			
1.1.14. FCF				
	4 31			
1.1.15. FACILITIES	4.31			

**-12** 

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 11 BUS TYPE 5	SQE CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980sm)			
	KD TE č	12814	PROD	ROTEE
	PHASE	UNIT	PHASE	PLUS
	1200	COST	COST	FR OD
1.1. GEOPLATFORM (BUS) -TOTAL	175.05	30.1C	369.49	544.54
1.1.1. STRUCTURE	9.12	1.48	1e,21	
1.1.1.1. STRUCTURE (PP[MARY)	5.54	1.32	16.20	
1.1.1.2. STRUCTURE ((FCONDARY)	3.36	.16	2.00	
1.1.1.3. STRUCTURE (TUDLING)	. 53			
1.1.2. THERMAL CONTROL	2.77	.46	4.94	
1.1.3. ATTITUDE CENTREL	29.25	3.20	40.26	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	20.26	2.65	25.22	
1.1.3.2. ATTITUDE CONTROL (AMCD)	. 99	1.23	15.04	
1.1.4. REACTION CONTROL	14.10	1.17	14.35	
1.1.5. ELECTRICAL PUWER	12.70	• • •	•••	4
1.1.5.1. SOLAR APRAY	12.79 6.60	9.06	111.16	
1.1.5.2. BATTERIES	.39	.63	63.69 7.66	
1.1.5.3. POWER COND & DIST	5.10	. 1.61	19.78	
1.1.5. TTEC	9.95	4.83	59.34	
1.1.7. PENDEZVOUS & DOCKING	25.63	3.22	39.50	
1.1.7.1. RENDEZVOUS (AVIONICS)	10.44	4.37	29.07	
1.1.7.2. DOCKING (MECHANICAL)	5.19	105	10.43	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.81	34.53	
1.1.9. PROGRAM MANAGEMENT	1.47	1.68	23.02	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.12	1.57	24.17	
1.1.11. SYSTEMS TEST ARTICLE	24.25			
1.1.12. SYSTEM TEST OPERATIONS	1.50			
1.1.13. SSF	¥0.36			
1.1.14. FSF				
1-1-15- 6461417776				
1.1.15. FACILITIES	2.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd

TABLE 1-2.	16.00 15.00			•
			12.25.31.	01/21/60
	ITEM 12 BUS TYPE 55	VC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
GEDSTATIONARY PLATFORM		FIRST	PRUD	RDT&E
	ROTEE	UNIT	PHASE	PLUS
	PHASE	COST	CUST	PRJD
	COST	6551		
1.1. GEOPLATFORM (BUS) -TOTAL	169.76	3+.63	486.55	656.31
	11.07	2.60	32.92	
1.1.1. STPUCTURE	5.52	2.51	30.75	•
1 1 1 1 CTRUCTURE (PRIMARY)	3.24	.10	2.16	
1 1 1 2 STRUCTURE (SECONTART)	1.20			
1.1.1.3. STRUCTURE (TCOLING)	1.20			
	2.67	.44	5.42	
1.1.2. THE PMAL CONTROL .	2.00			
	31.88	5.33	65.38	
1.1.3. ATTITUDE CONTPOL	7.7	3.07	47. 15	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	1.37	1.46	17.93	
1.1.3.2. ATTITUDE CONTROL (APCO)			103.05	
TO STACKLES CONTROL	21.70	8.47	103.95	
1.1.4. PEACTION CONTROL			102.64	
1.1.5. ELECTRICAL POWER'	17.16	8.36	75.72	
1.1.5. ELECTRICAL POOR	6.11	0.17	7.60	
1.1.5.1. SOLAP APPAY	• 39	.63	19.23	
1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	5.66	1.57	14.63	
1.1		1 11	60.62	
1.1.6. TIEC	10.21	5.59	00.02	
1.1.0. 1100				
1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.7.7. DICKING THE		. 70	45.47	
1.1.8. INTEGRATION, ASSEMBLY, F. C/O		3.70	45.11	
1.1.6. 1.11 0.41.1.		2.47	30.31	
1.1.9. PROGRAM MANASEMENT	5.67	2.47	50002	
		2.59	31.63	
1.1.10. SYSTEMS ENERG & INTEGRATION	15.76	2.77		
1.1.11. SYSTEMS TEST APPTICLS	34.57			
	6.56			
1.1.12. CYCIEM IEST OPERATIONS				
	9.01			
1.1.13. GCF	****			
1.1.14. FCF				
	5.12			
1.1.1. FACILITIES				

Table I-2. Nominal Traffic Model Cost Runs, Contd 545TEM LIFE; UNITS PRODUCED E.06 28.00

			11.41.30.	01/21/8
11	EP 13 BUS TYPE 3	SOR CASE II		
GENSTATIONARY PLATFORM PROGRAM COSTS (1	986 SM)			
	ROTEE	FIRST	PROD	RDTEE
	COST	T203	PHASE	PLUS PPUD
1.1. GEOPLATEGOM (PUS) -TOTAL	119.30	25.29	553.44	673.24
1 1 1 570057005	0.43		26 21	
1.1.1. STRUCTURE	9.67	1.64	35.71 31.03	
1.1.1.2. STRUCTURE (PPIMARY) 1.1.1.2. STRUCTURE (SECONDARY)	3.33		4.08	
1.1.1.3. STRUCTURE (TOOLING)	•60	.19	4,00	
1.1.2. THERPAL CONTROL	2.71	. 3 .	6.29	
1.1.3. ATTITUDE CONTROL	23.16	2.84	62.12	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.37	1.71	37.46	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.81	1.13	24.66	
1.1.4. REACTION CONTROL	13.56	2.43	53.16	
1.1 SIECTPICAL POWER	10.58	8.44	164.75	
1.1.5.1. SCLAR ARPAY	5.28	6.20	135.62	
1.1.5.?. RATTERIES	.31	•65	14.23	
1.1.5.3. POWER COND & DIST	5.00	1.60	34.90	
1.1.6. TTSC	7.94	4.03	86.14	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. OFND ZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.C. INTEGRATION, ASSEMBLY, & C/O		2.37	51.88	
1. 1. 9. POTGRAM MANAGEMENT	5.00	1.08	34.59	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.74	1.56	34.59	
1.1.11. SYSTEMS TEST ARTICLE	22.13			
1.1.12. SYSTEM TEST OPERATIONS	4.46			
1.1.13. 65	6.75			
1.1.14. FSF				
1.1.15. FACILITIES	2.60			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/60
	ITEM 14 BUS TYPE 3	SEC CASE 11		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
	ROTEE	FIRST	PROD	RDTEE
	PHASE	UNIT	PHASE	PLUS
	COST	1200	COST	PKOD
1.1. GEOPLATFORM (BUS) -TOTAL	171.97	40.75	464.26	641.15
1.1.1. STOUCTURE	10.56	2.22	25.52	
1.1.1.1. STRUCTURE (PPIMARY)	6.24	2.03	23.36	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.2. STRUCTURE (TOOLING)	3.40	.19	2.16	
1.1.1.7. NIPUCTURE (TUTLING)	.91			
1.1.2. THERMAL CONTROL	2.88	.45	5.19	
1.1.3. ATTITUDE CONTROL	31.73	5.18	59.66	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.39	3.73	43.01	
1.1.3.2. ATTITIDE CONTROL (AMCD)	1.34	1.45	16.65	
1.1.4. PEACTION CONTROL	21.72	8.15	93.89	
1.1.5. ELECTRICAL POWER	13.75	5.94	114.52	
1.1.5.1. STLAR ARRAY	7.05	7.46	02.87	
1.1.5.2. MATTERIES	.39	.74	8.24	
1.1.5.3. POWER CONG & OTST	6.30	1.77	20.41	
1.1.5. TTSC	10.27	5.79	65.70	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.01	43.86	
1.1.9. PROGRAM MANAGEMENT	6.73	2.54	29.24	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.00	2.67	30.76	
1.1.11. SYSTEMS TEST ARTICLE	35.54			
1.1.12. SYSTEM FIST OPERATIONS	f • 40			
1.1.13. 655	7.09			
1.1.14. FCF				
1.1.15. FACILITI'S	4.91			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFT; UNITS PRODUCED 16.00 13.00

			12.25.31.	01/21/60
	ITEM 15 BUS TYPE 5	3CC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(196GSA)			
	*DT&E	FIRST	FKOD	RDTSE
	PHASE	UNIT	PHASE	PLUS
	C0 5T	COST	COST	PRGD
1.1. GEOPLATFORM (BUS) -TOTAL	162.20	36.62	393.77	555.97
1.1.1. STPUCTURE	7.22	1.37	14 22	
1.1.1.1. STRUCTURE (PRIMARY)	5.37	1.18	14.72	
1.1.1.2. STRUCTURE (SECONDARY)	3.40	.19	12.70	•
1.1.1.3. TRUCTURE (TEDLING)	• • • •	• 4 4	2.02	
1.1.2. THEPPAL CONTRCL				
	2.89	.45	4.64	
1.1.3. ATTITUDE CONTENL	31.15	4.06	50.14	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	49.91	3.28	35.23	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	14.91	
1.1.4. PEACTION CONTROL	21.20	7.01	75.37	
1.1.5. ELSCIRICAL POWER	12.60	4		
1.1.5.1. SOLAR ARRAY	13.C3	9.24	99.34	
1.1 PATTERIES	6.60	6.62	73.31	
1.1.5.3. POWER COND & DIST	6.09	• 72	7.69	
	8.04	1.71	16.34	
1.1.6. 1757	10.27	5.79	62.27	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.4. INTECRATION, ASSEMBLY, & C/O		3.44	36.80	
			30.00	
1.1.9. PPHGRAM MANAGEMENT	5.43	2.20	24.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.32	2.40	25.76	
1.1.11. CALLER LEST WELLER	31.94			
1.1.12. SYSTEM TEST OPERATIONS	7.41			
	7.41			
1.1.13. 654	76			
1.1.14. FSE				
1.1.15. FACILITIES	6-16			

Table I-2. Nominal Traffic Model Cost Runs, Contd

		ITEM 16 BUS TYPE 3		12.25.31.	01/21/60
è	GEOSTATIONARY PLATFORM PROGRAM COST	• • • • • • • • • • • • • • • • • • • •	24C. CN2F 11		
	COST	5 (1980sm)			
		ADTEE	FIRST	00.00	
		· +445c	LNIT	PROD PHASE	ROTEE
		COST	CUSI		PLUS
	I.I. GEOPLATFORP (BUS) -TOTAL			CUST	PPGD
	-TOTAL	195.79	30.43	363.71	
	1.1.1. STRUCTURE			363671	579.50
	lolololo STRUCTURE (PRIMARY)	43.5×	2.14	21.30	
	1. 1. 1. 2. STRUCTURE (SECONDARY)	6.17	1-74	19.39	
	1.1.1.3. STRUCTURE (TCOLING)	3.55	. 26	1.99	
		• 45		****	
	1.1.7. THERMAL CONTROL				
		2.96	• 40	4.50	
	1.1.3. ATTITUDE CONTECL	30.51			
	lelelele Affiring Contact taurouses.	30.91	4.46	44.49	
•	1.1.3.7. ATTITUDE CONTROL (AMCD)	29.70	3.09	30.90	
		1.20	1.30	13.60	
	1.1.4. REACTION CONTROL	18.29			
	1.1.5	16.524	3.77	37.64	
	1.1.5. FLECTRICAL POWER	14.00			
	1.1.5.1. SOLAS ASPAY	7.06	10.72	100.0€	
	1.1.5.7. RATTERITS	.39	7.46	74.45	
	1.1.5.3. OGER COND & DIST	5.54	• 72	7.14	
	1.1.6. TTEC	***	1.85	10.49	
		10.35	6.64		
	1 1 2 05005500		0.04	60.34	
	1. 1. 7. REMOEZVOUS & DOCKING	24.24	3.04		
	1.1.7.1. RENDEZVOUS (AVIONICS)	19.54	2.45	30.23	
	1.1.7.2. POCKING (PECHANICAL)	4.70		24.44	
	1.1.4 farresses		. : 9	5.46	
	1. 1. 4. INTEGRATION, ASSERBLY, 6 C/O		3.19		
	1.1.9. PROGRAM MANAGEMENT		30.7	35.46	
	TOTAL PROBLEM STANGEMENT	9.23	2.39		
	1.1.10 EXETTED THE		2.34	23.91	
	1.1.10. SYSTEMS ENGRG & INTEGRATION	19.44	2.51	• • •	
	1.1.11. SYSTEMS TOST ARTICLE		2.51	25.10	
	Server State 2 1521 WellCft	33.52			
	1.1.12. SYSTEM TEST OPERATIONS				
	STATES 1-21 DECKALIUMS	* . 3C			
	1.1.13. GSE				
	To be	11.13			
1	1.1.14. FSF				
1	1.1.15. FACILITIES .				
		3			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE : UNITS PRODUCED

16.00 9.00

			12.25.31.	01/21/60
	ITEM 17 BUS TYPE 37	PC * CAS: 111		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19805#)			
	ROTEF	FIRSI	PROD	ROTE
	32419	LNIT	PHASE	PLUS
	1202	C 05 T	COST	PROD
1.1. GEOPLATEDPH (BUS) -TOTAL	264.96	42.36	323.60	528.56
	:0.98	2.27	17.30	
1.1.1. STPUCTUPE	6.27	2.65	15.72	
1.1.1.1. STRUCTURE (PRIMARY)	3.79	.22	1.66	
1.1.1.2. STRUCTUR_ (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	,,,,	•		
1.1.2. THEOPAL CONTROL	2.94	.47	3.63	
	31 . 74	4.74	36.25	
1.1.3. ATT: 7H3" CONTROL	29.98	3.34	25.56	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	1.76	1.40	10.00	
1.1.2.2. ATTITUD: CONTROL (AMCD)	1.40			
1.1.4. PRACTION CONTROL	19.67	4.13	31.50	
	15.04	11.83	90.50	
1.1.5. FLISCTRICAL POWER	7.95	3.71	66.60	
1.1.5.1. SOLAR APPAY 1.1.5.2. MATTIMILS	.40	.09	6.24	
1.1.5.3. • OWER COND & DIST	7.69	2.23	17.06	
1.1.5.3. " 1986 CONO & 0131				
1.1.6. ******	10.46	6.42	49.12	
1.1.7. PENDEZVOUS & DOCKING	24.32	3.00	23.57	
1.1.7.1. PENDETVOUS (AVIONICS)	19.59	2.49	14.03	
1.1.7.2. DOCKING (PECHANICAL)	4.73	.59	4.>4	
1.1.9. INTEGRATION. ASSEMPLY. & C/O		3.4>	30.24	
1.1.9. PROCRAM MANAGEMENT	€.48	2.64	20.16	
1.1.17. SYSTEMS ENGRG & INTEGRATION	20.05	2.77	21.17	
1.1.11. SYSTEMS TEST ARTICLE	36.30			
SHULLY CAST' LEST DESATIONS	5.13			
1.1.11. (**	11.46			
1.1.14. ***				
1.1.15. 555 (1115)	4.24			

Table I-2. Nominal Traffic Model Cost Runs, Contd SYSTEM LIFE; UNITS PRODUCED 16.00 10.00

12.25.31. 01/21/00	ITEM 18 BUS TYPE 54 AC' CASE II	# COSTS (1946\$M)	HOTES FARST PROD ROTEE FARSE UNIT PHASE FLUS COST CLST	149.37 34.84 335.96	5-46 1.39 11.27	62.1		3.96	10.71 4.30	ONICS) 20.54 2.96 24.78	 10,75 3,55 29,65	11.74	7.4" 8.71 73.42	. e5	41.7	17.44 6.35 53.51	3000	4.75 20.65	1 6/0	£.2.4	ATION 19.50 2.61 21.58			11.00		
	11.4 19	GEOSTATIONARY PLATFORM PARGRAM COSTS (1940SM)		1-1- GEDOLATFORM (BUS) -TOTAL	1.1.1. ATOUCTURE		1.1.1.1. STPUCTUPE (TCOLING)	1.1.2. THE PHAL CONTROL		1.1.3.1. ATTITUDE CONTROL (AVIONICS)	1.1.4. PEACTION CONTROL	1.1. 4. electrica, Power,	1.1.5.1. SCLAM ARBAY	٠	1.1.5.3. POWER COND C DIST	1,1,4, 7760	1.1.7. armozzvous 6 occkins	1.1.7.1. OF NDE 2VOUS (AVICALS) 1.1.7.2. DOCKING (PECHANICAL)	ABLY, 6	1.1.9. PPOCPAN PANASEMENT	1.1.15. SYSTEMS ENCRG & INTEGRATION	1.1.11. SYSTEMS TEST APPROLE	1.1.12. CYSIEM TEST CPERATIONS	1.1.17, 645	1.1.14. 556	

Table I-2. Nominal Traffic Model Cost Runs, Contd

*			12.25.31.	01/21
	ITEM 14 BUS TYPE 3	7DC CASE II		
GEOSTATIONARY PLATFORM PROSRAM COSTS	(1980SM)			
	ROTSE	FIRST	PROD	ROTEL
	. PH 15%	UNIT	PHASE	PLUS
	cast	CUST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	177.32	43.36	331.66	506.98
1.1.1. STRUCTURE	9.93	1.58	12.11	
1.1.1.1. STRUCTURE (PRIMARY)	5.59	1.37	10.45	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	3.79	.22	1.00	
10,101036 STRUCTURE (TUTETAG)	• 5 5			
1.1.2. THERMAL CONTROL	2.94	• 47	3-63	
1.1.3. ATTITUDE CONTPOL	31.79	5.24	40.05	
1.1.3.1. ATTITUGE CONTROL (AVIONICS)	30.44	3.78	26.94	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.45	11.11	
1.1.4. PFACTION CONTROL	21.79	0.20	63.33	
1.1.5. ELECTRICAL POWER	15.87	11.77	90.06	
1.1.5.1. SOLAR ARPAY	7.95	0.71	66.60	
1.1.5.2. PATTERIES	.40	.07	0.04	
1.1.5.3. POWER COND. & DIST	7.52	2.17	16.63	
1.1.6. TTEC	10.46	6.42	49.12	
1. 1. 7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.6. INTEGRATION, ASSEMBLY, & C/O		4.05	31.00	
1.1.9. PROGRAM MANAGEMENT	5.87	2.70	20.66	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.23	4.84	21.70	
1.1.11. SYSTEMS TEST ARTICLE	37.62	are an all Park		
1.1.12. SYSTEM TEST OPERATIONS	9.36			
1.1.13. 058	9.23			
1.1.14. FSF				
1.1.15. FACILITIES	4.19			
TOTAL CONCILITIES	4.74			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED

			12,25,31.	01/21/60
	ITER 20 BUS TYPE 3900	100 CASE 111		
GFOSTATIONAPY PLATFORM PROGRAM COSTS	(198014)			
	KOTEE PHASE CDST	FIRST	PROD PHASE COST	R015E PLUS PRUD
1.1. GEOPLATFORM (BUS) -TOTAL	189.29	46.24	309.64	557.33
1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.1. TRUCTURE (SECONDARY) 1.1.1.3. STRUCTUPE (TOULING)	3.45	2.64	20.18 18.42 1.75	
1.1.2. THERMAL CONTROL	5.96	• 40	3.70	
1.1.3.1. ATTITUDE CONTPOL 1.1.3.1. ATTITUDE CANTROL (AVIONICS) 1.1.3.2. ATTITUDE CANTROL (AMGD)	32.55	14.01	45.96	
1.1.4. PENCILON CONTROL	27.72	1	76.30	
1.1.5. ELCCPICAL POWFR 1.1.5.1. SOLAR APPAR 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	15.71 7.95 7.95 7.36	11.72	0045	
1.1.6. 1750	13.55	61.3	51.62	
1.1.7.1. PENDEZVEUS & DOCKING 1.1.7.1. FENDEZVEUS (AVEDMICS) 1.1.7.2. PROCKENS (MECHANICAL)		1		
1.1.9. INTEGRATION, ASSEMBLY, 6 C/O		4.51	34.49	
1.1.9. DOCCRAM MANASEMENT	7.11	3.01	22.99	
1.1.10. TYSTEMS ENGRG & INTEGRATION	16.41	01.0	24.14	
1.1.11. TYSTEMS TEST ANTICLE	45.05			
1.1.12. SYSTEM TEST OPERATIONS	12.42			
1.1.13. 6'E	4.61			
1.1.14. FSF				
1.1.15. FACILITIES	5.12			,

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 21 BUS TYPE 3	BOE CASE II		
GEOSTATIONARY PLATFORM PROGRAM COST	S (19605M)			
	237CR	FIRST	PROD	AD775
	PHASE	TIAU	PHASE	RDTSE Plus
	COST	CUSI	1200	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	1 75 . 99			,
1 1 1	1,7,1,7	37.73	288.65	404.55
1.1.1. STRUCTURE (PRIMARY)	11.17	2.32	17.73	
1.1.1.2. STRUCTUPE (SECONDARY)	5.37	2.09	15.99	
1.1.1.3. STRUCTURE (TCOLING)	3.92	.23	1.74	
THE STRUCTURE (ICULING)	• 45	***	2074	
1.1.2. THEPPAL CONTROL	2.47	Paris .		
	21	. 44	3.36	
1.1.3. ATTITUDE CONTROL	30.24			
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.27	2.60	30.09	
1.1.3.2. ATTITUES CONTONE (AMON)	1.17	1.34	19.45	
1.1.6. 05167500 651500	-7.	4.54	10.23	
1.1.4. REACTION CENTROL	15.15	1.62	12.37	
1.1 EL CORICAL POWER.			12.37	
1.1.5.1. SOLAP ARPAY	15.94	11.77	90.00	
1.1.5.2. MATTERITS .	7.95	U.71	66.66	
1.1.5.3. PONTO COND & DIST	•40	.67	6.04	
	7.49	5.10	10.26	
1.1.6. TTEC	10.29			
	10.24	5.64	44.69	
1.1.7. PENDEZVOUS & DOCKING	26.55	3.47		
1.1.7.1. RENDEZVOUS (AVIONICS)	19.57	2.47	26.55	
1.1.7.2. DOCKING (MECHANICAL)	6.99	1.00	10.91	
1 1 0	•	1.50	7.64	
1.1.A. INTEGRATION, ASSEMBLY, & C/O		3.53	26.98	
1.1.9. PERGRAM MANAGEMENT		****	20.40	
TOTAL PROBAN -ANDSEPTIN	P. 30	2.35	17.98	
1.1.10. CYCIEMS ENGRG & INTEGRATION				
	19.61	2.47	18.85	
1.1.11. SYSTEMS TEST ARTICLE	32.91			-
	25.41			
1.1.17. SYSTEM TEST OPERATIONS	0.15			
1.1.13. 655				
	11.21			
1.1.14. #5"				
7737773 0 6				
1.1.15. FACILITIES	2.43			
	3.51			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 22 BUS TYPE 3	BFC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960sm)			
	NO TEE	FIRST	PROC	ROTEE
	PHASE	UNIT	PHASE	PLUS
	CUST	CCST	COST	PROL
1.1. GEOPLATFORM (BUS) -TOTAL	207.85	43.46	332.46	540.31
1.1.1. STRUCTURE	11.31	2.40	19.30	
1.1.1.1. STRUCTURE (PRIMAPY)	6.36	2.17	18.39	
1.1.1.2. STRUCTURE (SECONDARY)	3.95	.23	1.75	
1.1.1.3. STRUCTURE (TCOLING)	1.05		,	
1.1.2. THERMAL CONTROL	2.96	.48	3.70	
1.1.3. ATTITUDE CONTROL	31.41	4 00		
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.1?	4.69 3.47	37.36	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.29	1.41	20.57	
1.1 4. BEACTION CONTOC			10.82	
1.1.4. PEACTION CONTROL	10.56	4.33	33.08	
1.1.5. FLECTRICAL POWER				
1.1 I. SOLAR ARRAY	14.22	11.09	90.97	
1.1.5.2. RATTERIES	7.95	B.71	66.60	
1.1.5.3. ODWER COND & DIST	7.87	.04	6.44	
	7.07	2.24	17.53	
1.1.5. TTEC	10.55	6.75	\$1.62	
1 1 2 00000000000		****	21.02	
1.1.7. PENDEZVOUS & DOCKING	24.38	3.11	43.10	
1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DECKING (MECHANICAL)	19.62	2.51	14.22	
1.1 DUCKING (MECHANICAL)	4.75	.00	4.50	
1.1 INTEGRATION, ASSEMBLY, & C/O		4.06	31.67	
1.1.9. PROCEAM MANAGEMENT	A.56	7.71	20.71	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.23	2.84	21.75	
1.1.11. SYSTEMS TEST ARTICLE	37. 1			
1.1.12. SYST_M TEST OPERATIONS	4.34			
1.1.13. Ger	11.57			
1.1.14. FSF				
1.1.15. FACILIFIES	4.50			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

			11.41.30.	01/21/8
	ITEM 23 BUS TYPE 3	SRS CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(196054)			
	RDT&E	FIRST	PROD	PDT &E
	PHASE	UNIT	PHASE	PLUS
	COST	cost	COST	PRGD
1.1. GEOPLATFORM (BUS) -TOTAL	132.94	30.65	445.47	578.41
1.1.1. STRUCTURE	11.19	2.32	33.76	
1.1.1.1. STRUCTURE (PPIMARY)	6.30	2.09	30.44	
1.1.1.2. STRUCTURE (SECONDARY)	3.34	.23	3.32	
1.1.1.3. STRUCTURE (TOOLING)	. 45			
1.1.2. THEPMAL CUNTROL	2.73	.41	5.92	
1.1.3. ATTITUDE CONTROL	23.46	3.31	40.10	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.73	2.10	30.51	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.93	1.21	17.60	
1.1.4. REACTION CONTROL	14.38	3.16	45.99	
1.1.5. EFFCTRICAL POWER	12.17	16.07	140.38	
1.1.5.1. "DLAD ADRAY	£.01	7.35	106.03	
1.1.5.2. 94 11 21 25	.32		11.02	
1.1 POWER COND & DIST	5.54	1.91	27.73	
1.1.5. TTSC	8.05	4.67	67.87	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVICNICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.E. INTEGRATION, ASSEMBLY, & C/O		2.87	41.76	
1.1.7. PROGRAM MANAGEMENT	5.30	1.92	27.84	
1.1.16. SYSTEMS ENGRG & INTEGRATION	11.51	1.92	27.84	
1.1.11. SYSTEMS TEST ARTICLE	26.92			
1.1.12. SYSTEM TEST OPERATIONS	6.03			
1.1.13. 656	7.24			4
1.1.14. FSF				*
1.1.15. FACILITIES	3.55			

Table 1-2. Nominal Traffic Model Cost Runs, Contd SYSTEM LIFE F UNITS PRODUCED

			12.25.31.	01/21/
	LTEM 24 BUS TYPE 39CC.	CC. CASE 11		
GENSTATIONARY PLATFORM PROGRAM COSTS	(194058)			
	D T T T T T T T T T T T T T T T T T T T	FIRST	PRUD	ROTGE
	COST	rsno	COST	FR00
1.1. GEOPLATFORM (BUS) -TOTAL	212.49	45.93	315.05	527.54
301231023	10.55	1.76	12.19	
35	17.5	1.53	10.51	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TODLING)	4.14	*?*	1991	
1.1.2. THT WALL CONTROL	66.5	06.	3.40	
1.1.3. ATTITUDE CONTRCL	31.35	4.63	33.14	
ATTITUD	33.37 1.2e	3.42	23.65	
1.1.4. P'ACTI'N CONTREL	AL. T	47*4	29.11	
	:		67.58	
1.1.5. FICTRICAL POWER.	01.0	16.02	72.19	
1 1 6 2 SATT-STO	0.4	1.07	7.36	
	6.67	2.63	18.03	
1,1,5, TTSC	10.63	7.05	48.36	
ö	34.45	3.15	21.59	
S	19.56	45.7	17.45	
DOCKING CHE	4.73	09.	4.14	
1.1.9. INTEGRATION. ASSEMBLY. & C/O		4.24	29.44	
1.1.9. PPOGRAM PANASCHENT	6.67	2.86	19.63	
1.1.10. SYSTEMS ENGRG & INTEGRATION	05.62	3.00	20.01	
1.1.11. SYSTEMS TEST ARTICLE	40.07			
1.1.12. TYSTEM TEST OPERATIONS	C7.7			
1.1.13. 676	41.17			
1.1.14. FSF				
1.1.15. FACILITIES	. [,*,			

Table I-2. Nominal Traffic Model Cost Runs, Contd

•			12.25.31.	01/21/60
	ITEM 25 BUS TYPE 3	PBE CASE II		•
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19801M)			
	ROTEE	FIRST	PROD	RDTEE
•	PHASE	UNIT	PHASE	PLUS
	COST	C071	COST	PRUD
1.1. GEOPLATEORM (BUS) -TOTAL	201.79	40.52	277.92	479.71
1.1.1. STRUCTURE	10.50	1.76	12.07	
1.1.1.1. STRUCTURE (PRIMARY)	5 . 74	1.52	10.41	
1.1.1.2. STPUCTUPE (SECONDARY)	4.11	.24	1.66	
1.1.1.3. STRUCTURE (TCOLING)	.63			
1.1.2. THEPMAL CONTROL	18.5	.45	3.09	
1.1.3. ATTITUDE CONTPOL	30.21	3.91	26.02	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	44.75	2.50	17.66	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.15	1.33	9.13	
1.1.4. REACTION CONTROL	1: -10	1.59	10.91	
1.1.5. FLECTRICAL POWER	18.44	14.22	97.52	
1.1.5.1. SOLAR APRAY	9.19	16.52	72.19	•
1.1.5.2. PATTERIES	.40	1.07	7.36	
1.1.5.3. POWER COND & DIST	9.84	2.02	17.97	
1.1.6. TTEC	19.34	6.09	41.40	
1.1.7. PENDEZVOUS & DOCKING	45.79	2 . 2		
1.1.7.1. PENDEZVOUS (AVIONICS)	17.50	3.53	24.24	
1.1.7.2. DOCKING (MECHANICAL)	7.19	1.04	17.12	
Total Water No Colon Vicini	7.14	1.04	7.12	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.79	22.97	
1.1.9. PROCKAM MANAGEMENT	4.45	2.52	17.32	***
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.99	2.65	10.16	
1.1.11. SYSTEMS TEST ARTICLE	35.34		*	
1.1.12. SYSTEM TEST OPERATIONS	1.75			
1.1.13. 655	11.43			
1.1.14. FSE				
1.1.15. FACILITY'S	3.54			
	1 6			

## Table I-2. Nominal Traffic Model Cost Runs, Contd

01/21/60

SYSTEM LIFF; UNITS PRODUCED

16.36 6.00

			12 .25.31.	9
	ITEM 26 BUS TYPE 3	PPE CASE III		
GEOSTATIONARY PLATFORM PROGRAM COST	S (1960sM)			
	KOTEE	FIRST	PR 00	ROTEE
	PRAH	TINU	PHASE	PLUS
	COST	1200	COST	PKOD
1.1. GEOPLATFORM (PUS) -TOTAL	205.71	41.63	206.94	492.65
1.1.1. STRUCTURE	1146	2.42	16.61	
1.1.1.1. STRUCTURE (PPIMARY)	6.37	2.10	14.95	
1.1.1.2. STEUCTUPE (SECUNDARY)	4.11	.24	1.66	
1.1.1.3. STRUCTURE (TOOLING)	1.00			
1.1.7. THERMAL CONTROL	2.89	.45	3.09	
1.1.3. ATTITUDE CONTROL	30.50	4.13	20.30	
1.1.3.1. ATTITUS CONTROL (AVIONICS)	29.30	2.76	18.95	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.21	1.30	9.36	
1.1.4. PEACTION CONTROL	15.40	1.74	11.91	
1.1.5. FLOCTRICAL FOWER	10.44	14.22	97.52	
1.1.5.1. SOLAR ARRAY	9.19	13.52	72.19	
1.1.5.2. PATTERIES	•45	1.07	7.36	
1.1.5.3. POWER COND & DIST	8.94	2.62	17.97	
1.1.6. TTEC	10.36	6.09	41.80	
1.1.7. RENDEZVOUS & DCCKING	26.79	3.53	24.24	
1.1.7.1. PENDEZVOUS (AVIONICS)	13.50	٥٠٠٥	17.12	
1.1.7.2. DOCKING (MECHANICAL)	7.19	1.04	7.12	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		3.71	26.82	
1.1.9. POOGRAM MANAGEMENT	1.57	2.61	17.08	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.26	2.74	18.77	
1.1.11. SYSTEMS TEST ARTICLE	35.47			
1.1.12. SYSTEM TEST OPERATIONS	9.03			
1.1.13. GSF	11.57			
1.1.14. FSF				
and the second s	2 22			
1.1.15. FACILITIES	3.90			

Table I-2. Nominal Traffic Model Cost Runs, Contd 8.00 14.00

			11.41.30.	01/21/60
	ITEM 27 BUS TYPE 5	699 CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1500SM)			
	KD T & E	FIRST	PROD	ROTEL
	PHASE	UNIT	PHASE	PLUS
	1200	CUST	CCST	FRCD
1.1. GEOPLATECH (BUS) -TOTAL	136.69	32.62	375.62	512.51
1.1.1. STPUCTURE	10.65	1.61	20.88	
1.1.1.1. STRUCTURE (PPIMARY)	5.91	1.56	10.02	
1.1.1.2. STRUCTURE (SECONDARY)	4.19	.25	2.06	
1.1.1.3. STRUCTUPE (TOOLING)	.65			
. 1.1.2. THEPMAL CONTROL .	2.61	.42	4.63	
1.1.3. ATTITUDE CONTROL	23.33	3.29	37.42	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.91	2.08	24.00	
1.1.3.2. ATTITUDE CONTROL (AMCD)	•92	1.21	13.43	
1.1.4. REACTION CONTROL	14.36	3.44	30.22	
1.1.5. FLECTRICAL POWER "	14.02	11.84	110	
1.1.5.1. SOLAR APRAY	6.70	0.47	135.67	
1.1.5.2. BATTERICS	•32	.96	97.57	
1.1.5.3. POWER COND & DIST	6.99		11.24	
	3.77	2.35	27.07	
1.1.4. 1150	6.15	5.01	57.73	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)			,	
1.1.º. INTEGRATION, ASSEMBLY, & C/D		3.00	35.21	ORIGINAL PAGE IS
1.1.9. PROGRAM MANAGEMENT	5.46	2.04	23.40	8
1.1.10. SYSTEMS FNGRG & INTEGRATION	11.74	2.64	23.40	. 25
1.1.11. SYSTEMS TEST APTICLE	26.54			20.70
1.1.12. SYSTEM TEST OPERATIONS	6.42			38
1.1.13. GGF	7.36			8
1.1.14. FSF				
1.1.15. FACILITIES	3.53			

Table I-2. Nominal Traffic Model Cost Runs, Contd 8.00 14.30

			11.41.30.	61/	21/80
	ITEM 28 BUS TYPE 5	6PB CASE III			
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960sm)				
	RDTEF PHASE	FIRST	PROD	ROTEE	
	COST	COST	PHASE	PLUS	
1.1. GEOPLATFORM (BUS) -TOTAL	141.13	34.18	393.64	534.77	
1.1.1. STRUCTURS	11.52	2.47	28.41		
1.1.1.1. STRUCTURE (PRIMARY)	6.40	2.22	25.55		
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	4.19	.25	2.86		
totaless stroctore (touting)	1.03				
1.1.2. THEPHAL CONTROL	2.91	.42	4.83		
1.1.3. ATTITUDE CONTROL	24.12	3.51	40.45		
1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	23.15	2.27	26.12		
1010 3020 ATTITUDE CONTROL (AMCD)	.97	1.24	14.34		
1.1.4. PEACTION CONTROL	14.69	3.49	40.19		
1.1.5. FLECTRICAL FUWER	14.03	11.80	135.92		
1.1.5.1. STLAR APRAY	6.70	0.47	97.57		
1.1.F. 2. PATTEPIES	• 32	.48	11.24	4	
1.1.5.3. POWER COND & DIST	7.00	2.35	27.11		
1.1.5. TTEC	8.15	5.01	57.73		
1.1.7. PENDEZVOUS & DOCKING					
1.1.7.1. PENDEZVOUS (AVIONICS)					
1.1.7.2. DOCKING (MECHANICAL)					
1.1.3. INTEGRATION, ASSEMBLY, & C/O					
		3.20	36.90		
1.1.9. PPOCRAM MANAGEMENT	5.5A	2.14	24.60		
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.99	2.14	24.60		
1.1.11. CYSTEMS TEST ARTICLE	29.91		(4)		
1.1.17. SYSTEM TEST OPERATIONS	6.73				
1.1.13. 65	7.54				
1.1.14. FCF					4:20
1.1.15. FACILITIES					
******* * *** !!!!!!!	3.95				

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 29 BUS TYPE 5	SEC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980SM)			
	ROTES	FIRST	PRGD	POTGE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PRGD
1.1. GEOPLATFORM (BUS) -TOTAL	219.26	48.13	291.76	516.04
1.1.1. STRUCTURE	11.92	2.59	15.70	
1.1.1.1. STEUCTUPE (PRIMARY)	6.50	2.34	14.16	
1.1.1.2. STRUCTURE (SECONDARY)	4.22	.25	1.52	
1.1.1.3. STRUCTURE (TOOLING)	1.10	•••	1.72	
1.1.2. THESMAL CONTENL	2.99	.50	3.02	
1.1.3. ATTITUDE CONTROL	21 40			
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.49	2.14	31.18	
1.1.3.2. ATTITUDE CONTROL (APCD)	30.36 1.34	3.70	22.44	
	1.,,4	1.44	8.74	
1.1.4. PFACTION CONTROL	19.17	4.65	20.20	
1.1.5. SIECTRICAL POWER	13.55	14.20		
1.1.5.1. SOLAR SERAY	9.17	14.52	86.41	
1.1.5.2. PATTERIFS	•4'3	1.37	63.79	
1.1.5.3. POWER COND & DIST	F. 36	2.66	6.50	
			16.11	
1.1.6. TTEC	10.66	7.18	43.50	
. 1.1.7. RENDEZVOUS & DOCKING	- 9			
1.1.7.1. RENDEZVOUS (AVIONICS)	24.49	3.17	19.20	
1.1.7.2. DOCKING (MECHANICAL)	19.57	2.56	15.52	
TOTAL SECRETA (MECHANICAL)	4.82	.61	3.69	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		4.50	27.27	
1.3.9. PROGRAM MANAGEMENT	6.43	3.00	18.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.93	3.15	19.09	
1.1.11. SYSTEMS TEST ARTICLE	41.99			
1.1.12. SYSTEM TEST OPERATIONS	17.37			
1.1.13. 655	.1.94			
1.1.14. FSE			*	F
1.1.15. FACILIFIES	4.97			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 30 BUS TYPE 5	PAC. CAZE III		¥
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980sm)			
	MOTES	FIRST	PROD	****
	PHASE	UNIT	PHASE	RDICE
	COST	1200	CuST	PLUS
1.1. GEOPLATFORM (BUS) -TOTAL				PROD
	221.67	44.46	299.61	521.49
1.1.1. STOUCTURE	12.49			221.44
1.1.1.1. STRUCTURE (PRIMARY)	5.55	3.69	16.70	
Leleleze STRUCTURE (SECONDARY)	4.22	2.03	17.16	
1.1.1.3. STRUCTURE (TOOLING)	1.41	•25	1.52	
1.1.1.	1.41			
1.1.2. THERMAL CONTROL	2.34			
1-1-1 17777		. •50	3.02	
1.1.3. ATTITUDE CONTROL	31.71	5.37		
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.58	3.93	32.56	
1.1.3.2. ATTITUDE CONTROL (APCD)	1.34	1.44	23.62	
1.1.4. REACTION CONTROL			0.74	
TO THE PERIOD CONTROL	19.45	4.96	33.45	
1.1.5. CLECTRICAL POWER.			30.07	
1.1.5.1. SOLAR APRAY	10.54	14.26	60.44	
1.1.5.2. MATT: #1:5 .	7.17	10.54	63.79	
1.1.5.1. ODLCE CUND & DIST	• 40	1.07	6.50	
	£.97	2.66	16.14	
1.1.6. 7750			10.14	
	10.56	7.13	43.50	
1.1.7. RENDEZVOUS E DOCKING			436.50	
1.1.7.1. RENDETVOUS CAUTOUTEEN	24.40	3.17	19.20	
1.1.7.2. DOCKING (MECHANICAL)	19.67	2.50	15.52	
	4.•?	.61	3.69	
1.1.8. INTEGRATION. ASSEMBLY, & C/O			3.07	
		4.62	20.02	
1.1.9. PPOGRAM MANAGEMENT			10002	
	***	3.00	10.68	
1.1.10. SYSTEMS ENERG & INTEGRATION			10000	
	21.73	3.24	17.61	
1.1.11. SYSTEMS TEST APPICE				
	43.15			
1.1.17. SYSTEM TEST OPERATIONS	10.50			
	1::-5-			
1.1.1?. GSF	12.05			
1.1.1	1.00			
1.1.14. FSF				
1.1.15				
1.1.15. FACILITIES	5.24			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTE" LIFE; UNITS PODUCED

			12.25.31.	01/21/80	
114	M 31 BUS TYPE 56	GC CASE III			
GENSTATIONARY PLATFORM PROGRAM COSTS (19	980 SK)				
GENS: ATTOMAKY PERTY PARTY PROSENT		FIRST	PRUD	ROTEE	
	ADTEE	UNIT	PHASE	PLUS	
	PHASE	cost	CUST	PROD	
	cost .				
1.1. GECPLATERNA (BUS) -TOTAL	143.91	49.52	300.14	441.06	
	10.70	1.02	11.06		
1.1.1. STOUCTURE	5.42	1.57	9.54		
, , , , , steucture (PRIMAPY)	4.22	. 25	1.52		
1 1 1 2 STRUCTURE (SECONDART)	.55				
1.1.1.3. STRUCTURE (TCOLING)	• , ,				
	2.39	.50	3.02		
1.1 THERMAL CONTROL					
	32.29	5.79	35-11		
1.1.3. ATTITUDE CONTROL	30.76	4.35	26.37		
1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.44	6.74		
	22.55	9.57	58.60		
1.1.4. PEACTION CONTROL	21 422				
	:•.32	13.61	62.47		
1.1.5. FLECTPICAL POVER	9.79	4.43	6C.16		
1.1. 1. COLAR ARRAY	.40	1.67	6.50		
1.1.5.C. BATTEPIES	5.83	2.61	15.30		
1.1.5.3. POWER CONG & DIST	****				
1.1.6. 1150	10.66	7.10	43.50		
1.1.7. RENDEZVOUS & DOCKING					
1.1.7.1. RENDEZVOUS (AVIONICS)					
1.1.7.2. DOCKING INSCHANICAL)		*			
ASSEMBLY & CAN		4.63	20.05		
1.1.d. INTEGRATION, ASSEMBLY, & C/O					
	7.19	3.09	18.79	* .	
1.1.9. PROGRAM MANAGEMENT			15.44		
1.1.10. SYSTEMS CHGRG & INTEGRATION	17.00	3.24	19.64		
	43.19				
1.1.11. SYSTEMS TEST ARTICLE					
1.1.17. TYSICA TEST OPERATIONS	10.59				
	5.72				
1.1.13. 646	****				
1.1.14. FSE					
	5.97				
1.1.15. FACILITIES					

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/00
***************************************	ITER 32 BUS TYPE	TIL BEAS SHE		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SF)			
	ROTEE	FIRST	PRUD	
	P-143F	UNIT		RDTGE
	CUST	CUST	PHASE COST	PLUS PROD
1.1. SEOPLATFORM (BUS) -TOTAL	211.60	59.13	310.71	522.30
1.1.1. STRUCTISE	17.97			722030
1.1.1.1. STRUCTUPE (PRIMARY)		3.15	16.46	
1.1.1.2. STRUCTUR: (SECONDARY)	5.36	2.34	14.94	
1.1.1.3. STRUCTURE (TOOLING)	1.41	.29	1.52	
1.1.2. THERMAL CONTROL				
	3.07	•53	2.61	
1.1.3. ATTITUDE CONTROL	33.56	7.21		
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.91		37.88	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.57	5.58	29.32	
1.1.4 2544215		1.63	8.56	
1.1.4. PEACTION CONTROL	23.72	12.50	66.09	
1.1.5. CLECTRICAL POWER			00.09	*
1. 1 1. SOLAR AREAY	15.59	14.46	76.00	
1.1.5.2. BATTERTES	9.19	10.2	55.31	
1.1.5.1. POVER COND & DIST	.41	1.16	6.11	
COMP COURT	9.29	2.77	14.58	
1.1.5. TTEC			14.50	
	10.39	6.13	42.74	
1.1.7. PENDEZVOUS & DOCKING			72017	
1.1.7.1. PENDELVOUS (AVIONICS)		1		
1.1.7.2. DOCKING (MECHANICAL)		• -		
1.1.9. INTEGRATION, ASSEMBLY, & C/D				
		5.53	29.04	
1.1.9. PROGRAM MANAGEMENT	7.55			
	****	3.65	19.36	
1.1.10. SYSTEMS ENGRE & INTEGRATION	10.27	3.97		
labella typicus year annua.		3.97	20.33	
TALLES TEST TESTEE	>1.57			
1.1.12. SYSTEM TAST OPERATIONS				
The state of the s	12.76			
1.1.13. 675				
38 8	10.33			
1.1.14. FSE				* 1
1.1.15. CICILITIES	7.43			
	21.57 12.76 10.33			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTE LIFE: UNITS PRODUCED

1.1.15. FACILITIES

16.00 5.00

				12.25.31.	01/2	1/60
	ITE	M 33 BUS TYPE 4	OCE CASE II			
GEOSTATIONARY PLACEDEM	PROGRAM COSTS (19	80\$K)				
		ROTEE	FIRST	PROD	ROTEE	
<b>P</b> ***		PHASE	UNIT	PHASE	PLUS	
		COST	CúST	COST	PROD	
1.1. GEOPLATFORM (BUS)	-TOTAL	212.69	44.05	234.64	447.33	
1. 1. 1. STRUCTURE		11.49	2.09	10.98		
1.1.1.1. STRUCTURE (PRIM		6.34	10	9.46		
1.1.1.2. STRUCTURE (SECO		4.t6	. 29	1.50		
1.1.1.3. STENCTURE (TOOL	ING)	.79				
1.1.2. THERMAL CONTROL		2.77	.49	2.56		
1.1.3. ATTITUSE CONTROL		30.79	4.34	22.00		
1.1.3.1. ATTITUDE CONTRO		27.52	2.75	15.46		
. 1.1.3.2. ATTITUDE CONTRO	L (AMCO)	1.25	1.39	7.32		
1.1.4. REACTION CONTROL		15.65	1.07	4.93		
1.1.5. ELECTRICAL POWER	<b>Y</b>	19.39	12.19	79.29		
1.1.5.1. SOLAR ARPAY		4.59	11.12	58.43		
1.1.5.2. BATTERIES	<u>:</u> _	• 41	1.16	6.11		
1.1.5.3. POWER COND & DI	51	9.39	2.41	14.76		
1.1.5. TTSC		10.55	73	37.45		
1.1.7. PENDEZVOUS & DOCK	ING	47.50	3.77	14.82	•	
1.1.7.1. RENDEZVOUS CAVE	DAICEL	19.72	2.60	13.66		
1.1.7.2. DOCKING (MECHAN	ICAL)	7.35	1.17	6.16		
1.1.º. THIFGRATION, ASSE	M8LY, & C/O		4.17	21.73		
1.1.9. PROGRAM MANAGEMEN	T	P.77	2.78	14.62		
1.1.10. CYCTEMS ENGRG &	INTEGRATION	20.73	2.42	1>.35		
1.1.11. SYSTEMS TEST ART	ICT 2	38.45				
1.1.1?. SYSTEM TEST OPER	200114	9.54				
1.1.13. GSC		11.00				
1.1.14. FCF						

4.23

-35

Table I-2. Nominal Traffic Model Cost Runs, Contd SYSTEM LIFE; JAITS PRODUCED

	TER 34 RIG TVDE COOK		12.25.31.	01/21/60
SEDSTATIONARY PLATFORM PROGRAM COSTS		11 367		·
	ROTEE	F : D C T		
	NA A C E		PR 00	SOTE
	503	1 2 2	PHASE	3 10
1.1. Gropt Atenda cours.		1:00	COST	200
- LOTAL	:23.40			00 %
Jelel Cranctus	64.533	20.00	260.23	
30100				21.63.12
TOTAL STRUCTURE (PRIMARY)	56.11	2.11	**	
TRUCTIDE	90.9	1.82	11.04	
1.1.1.3. STRUCTURE (TOSLING)	4.70	20	4.57	
	76.		1.52	
1.1.7. THERAL CONTROL				
	3.07			
I. 1. 3. ATTITUDE CONTPOL			7.81	
	31,43	6. 33	;	
1.1.3.2. ATTITUDE CONTROL (AUTONICS)	30,58	200	27.97	
	1.25	200	20.65	
1.1.4. PEACTION CONTROL		45.7	7.32	
ייייי לייייייייייייייייייייייייייייייי	19.46			
1.1.5. Trentral cours			26.14	
_	19.62			
101052 94775977	9.43	15.10	79.36	
In I. R. R. DOLLED CO. C.		11.12	50.43	
		1.16	6.11	
1.1.6. 7700		2002	14.63	
	>n • 0 •	6.13	42.74	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDELYOUS (AVTONTOR)	24.69	3.70	:	
1.1.7.2. DOCKING (MECHANICALL	19.79	200	17.23	
	76.5	200	13.92	
1.1.6. TETT GRATION, ASSTURIY, 6 COM			3.28	
		4.73	***	
1.1.9. PONGRAM MANAGEMENT			80.17	
	60.8	3,16	16.54	
A 1010. TYTTEMS - NGRG & INTEGRATION	**		40.01	
1.1.11	61.13	3.31	17.42	
TOTAL STRICKS TEST ARTICLE	44.13		*	
Tololle system r. sr assessment	•			
SHULLY OF THE STATE OF THE STAT	27.44			
1.1.13. 646				
	12.30			
1.1.14. FSE				
	•			
TOTAL STATES	36.3			

Table I-2. Nominal Traffic Model Cost Runs, Contd

01/21/80

SYSTEM LIFF; UNITS PRODUCED

16.06 6.00

			12.25.31.	01/21/8
	ITEM 35 BUS TYPE 4	OFE CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1986sm)			
	MOTLE	F155T	PRGD	POTEE
	PHASE	UNIT	PHASE	FLUS
	COST	COST	C021	PROD
1.1. GEOPLATEGRA (BUS) -TOTAL	216.58	46.00	241.71	458.29
1. 1. 1. STOUCTURE	12.54	2.75	14.49	
1.1.1.1. STRUCTURE (PPIMARY)	5.60	2.47	12.99	
1.1.1.2. STRUCTUPE (SECOMDARY)	4.66	.29	1.50	
1.1.1.3. STE CORE (TOOLING)	1.14			
1.1.2. THERPAL CONTROL	2.97	.49	2.56	
1.1.3. ATTITUDE CONTROL	31 • 24	4.57	24.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.76	3.14	16.52	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.30	1.44	7.47	
1.1.4. PEACITOR CONTROL	15.92	2.02	10.61	
1.1.5. ELECTPICAL POWER	19.40	15.09	. 79.32	
1.1.5.1. SOLAR APPAY	4.59	11.12	50.43	
1.1.5.2. 941TERI-S	.41	1.10	6.11	
1.1 3. PO.FP COND & DIST	9.49	2.01	14.78	
1.1.6. TTEC	13.55	7.13	37.45	
1.1.7. PENDEZVOUS & DOCKING	27.17	3.77	14.62	
1.1.7.1. RENCETVOUS (AVIONICS)	19.72	7.60	13.66	
1. 1. 7. 2. DOCKING (MECHANICAL)	7.00	1.11	6.16	*
1.1.9. THIEGRATION. ASSEMBLY, & C/O		4.30	22.59	
1.1.9. PPOCRAM MANAGEMENT	3.PE .	2.67	15.06	
1.1.12. SYSTEMS ENGRE & INTEGRATION	20.99	3.01	15.01	
1.1.11. SYSTEMS TEST ARTICLE	40.12			
1.1.12. SYSTEM THAT DESPATTIONS	9.73			
1.1.13. 655	12.30			
1.1.14. FSF				
1.1.15. FACILITIES	4.51			

6.00 12.00

			11.41.30.	01/21/80
	ITER 36 BUS TYPE 40	II BEAD ED		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19603M)			
5,03,12,13,	KDISE	FIRST	FRUD	RDTEE
	PHASE	TINU	PHASE	PLUS
	1202	1200	cast	PRUD
L.1. GEOPLATFORM (BUS) -TOTAL	142.62	35.03	350.23	492.64
		2.30	19.97	
1.1. STPUCTURE	11.22	1.73	17.24	
-1-1-1 STRUCTURE (PRIMARY)	5.97	.27	2.73	
1 1 2 STRUCTURE (SECONDARY)	4.51	•21		
.1.1.7. STRUCTURE (TOOLING)	.74			
1. 1.2. THERMAL CUNTROL .	2.87	.44	4.41	
		3.49	34.89	×
1.1.3. ATTITUDE CONTROL	24.10	2.22	22.49	
1 3 1 ATTITUDE CONTROL (AVIONICS)	23.13	1.24	12.41	
.1.3.2. ATTITUDE CONTROL (AMCD)	.97	1,24		
1.1.4. REACTION CONTROL	14.68	3.47	34.66	
		12.57	125.51	
1.1.5. FLECTRICAL POWER	14.71	4.62	90.69	
1.1.5.1. SOLAR ARRAY .	7.03	1.06	10.55	
1.1.5.2. BATTERIES	•32		24.67	
1.1.5.3. POWER COND & DIST	7,35	2.49	24101	
1.1.6. TTEC	6.26	5.43	54.17	*
1. 1. 7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDET VOUS (AVICNICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1 INTEGRATION, ASSEMBLY, & C/O		3.29	32.63	
		2.13	21.89	
1.1.9. PPOGRAM MANAGEMENT	5.61			
1.1.10. TYSTEMS ENGRG & INTEGRATION	12.06	2.19	21.69	
1.1.11. SYSTEMS TEST ARTICLE	30.59			
1.1.12. SYSTEM TEST OPERATIONS	5.91			
1.1.13. 655	7.56			
1.1.14. FSF				
1.1.14. 13.				
1.1.15. FACILITIES	3.93			

1-38

8.00 12.00

			11.41.30.	01/21/80
	ITEM 37 BUS TYPE 4	OFB CASE II		
GENETATIONARY PLATFORM PROGRAM COST	S (1980sm)			
	ROTEE	FIRST	PROD	ROTEE
	PHASE	UNIT	PHASE	PLUS
	COST	CCST	CGST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	146.97	36.72	366.64	513.61
1.1.1. STRUCTURE	12.20	2.50	26.75	
1.1.1.1. STRUCTUPS (PRIMAPY)	6.55	2.41	24.02	
1.1.1.2. STRUCTURE (SECONDARY)	4.51	.27	2.73	
1.1.1.3. STRUCTURE (TOOLING)	1.14			
1.1.2. THEPMAL CONTROL	2.07	.44	4.41	
1.1.3. ATTITUDE CONTROL	24.39	3.73	37.22	
1.1.2.1. ATTITUDE CONTROL (AVIONICS)		2.45	24.47	
1.1.3.2. ATTITUDE CONTROL (APCD)	1.02	1.20	12.75	•
1.1.4. FRACTION CONTROL	15.01	3.64	38.34	
1.1.5. SLECTRICAL POWER	14.72	12.57	125.55	
1.1.4.1. SCLAR ARRAY	7.03	4.02	90.09	
1.1.5.2. PATTERIES	•32	1.66	10.55	
1.1.5.3. POMEN COND & DIST	7.36	2.49	24.91	
1.1.6. TTEC	8.26	>.43	54.17	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PINDEZ VOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				60
1.1.P. INTEGRATION, ASSEMPLY, 6 C/O		3.44	34.37	OF POOR OU PAGE IS
1.1.9. PROGRAM MANAGEMENT	5.73	2.30	22.92	*S. A.S.
1.1.17. SYSTEMS ENGRG & INTEGRATION	12.31	2.30	22.92	25
fereign systems and a streaming	12.51	2.30	22.76	A 40
1.1.11. SYSTEMS TEST ARTICLE	32.13			33
1.1.12. SYSTEM TEST OPERALIONS	7.23			, 'S
1.1.1?. CSF	7.74			
1.1.14. ***				
1.1.15. FACILITIES				

[-39]

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.75.31.	01/21/80
	ITEM SE BUS TYPE 4	THE CASE III		
GEOSTATIONARY PLATFORM PROGRAM COST	5 (1960sm)			
	RDTGE	FIRST	PROD	RDT &E
	PHASE	UNIT	PHASE	PLUS
	COST	1200	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	210.19	56.75	260.76	470.96
1.1.1. STRUCTURE	12.00	2.26	10.05	
1.1.1.1. STRUCTURE (PRIMARY)	6.18	1.95	0.67	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	1.36	
1.1.1.3. STRUCTURE (TUDLING)	. 47			
1.1.2. THE PMAL CONTROL	3.10	.55	2.44	
1.1.3. ATTITUDE CONTROL	33.36	6.93	30.76	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.73	5.33	43.64	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.63	1.61	7.13	1
1.1.4. REACTION CONTROL	23.67	12.60	53.24	
1.1.5. FLECTRICAL POWER	19.73	15.30	67.90	
1.1.5.1. SOLAR ARRAY	9.57	11.12	49.32	
1.1.5.2. BATTERIES	.41	1.22	5.56	
1.1.5.3. POWER COND & DIST	9.74	2.43	13.00	
1.1.6. TTEC	11.02	d.71	38.60	
1.1.7. PENDEZVOUS & DOCKING				
1. 1. 7.1. OF NOT TYPUS (AVIONICS)				
1.1.7.2. POLKING (MECHANICAL)		-		
1.1.3. INTEGRATION, ASSEMBLY, & C/O		5.49	24.37	
1.1.9. PROGRAM MANASEMENT	7.61	3.00	16.25	
1.1.10. SYSTEMS ENGRG & INTERRATION	17.79	3.84	17.06	
1.1.11. SYSTEMS TEST ARTICLE	51.25			
1.1.17. SYSTEM TOST DOFPATIONS	12.54			
1.1.13. 65F	10.29			
1.1.14. fer				
1.1.15. FACILITIES	7 40			

## Table I-2. Nominal Traffic Model Cost Runs, Contd

12.25.31.

01/21/60

SYSTEM LIFF: UNITS PRODUCED

				•••
	ITEM 39 BUS TYPE 4	16F C45c 11		
GENSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
	KUTEE	FIRST	PKOD	ROTEE
	PHASE	UNLT	PHASE	PLUS
	COSI	COST	1200	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	221.18	47.68	211.65	432.83
1.1.1. STPUCTURS	12.92	2.95	13.10	
1.1.1.1. STRUCTURE (PRIMARY)	6.72	2.64	11.73	
1.1.1.2. STPUCTURE (SECONDARY)	4.9?	• 31	1.36	
1.1.1.3. STRUCTURE (TGOLING)	1.27			
1.1.2. THEPMAL CONTROL .	3.00	.20	2.24	
1.1.3. ATTITUDE CONTROL	31.31	4.75	21.20	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.96	3.33	14.76	
1.1.2.2. ATTITUDE CONTROL (AMEN)	1.35	1.45	6.44	
1.1.4. PRACTION CONTROL	46.17	2.17	9.61	
1.1.5. FLECTRICAL POWERS	19.6F	15.28	67.03	
1.1 SOLAP APPLY	7.59	11.12	49.35	
1. 1. 5. 2. BATTER 1 = 5	.41	1.45	5.56	
1.1.5.3. POWER COND & DIST	4.67	2,41	12.92	*
1.1.6. TTEC	17.75	7.58	33.64	
1.1.7. PENDEZVOUS & COCKING	27.76	3.00	17.23	
1.1.7.1. PENDEZVOUS (AVIONICS)	19.7d	2.65	11.75	
1.1.7.2. DECKING (MECHANICAL)	9.19	1.23	5.47	
1.1.4. INTEGRATION, ASSEMBLY, & C/O		4.46	19.70	
1.1.9. PROGRAM MANAGEMENT	9.31	2.47	13.19	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.31	3.12	13.60	
1.1.11. SYSTEMS TEST APTICLE	41.57			
1.1.12. TYSIEM IEST OPERATIONS	17.24			
1.1.13. 655	12.10			
1.1.14. FSF				
1.1.15. FACILITIES	4.97			

			11.41.30.	01/21/80
	ITEM 40 BUS TYPE 4	168 CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960sm;			
	KDTEE	F1#51	PRUD	ROTEE
	PHASE	UNIT	PHASE	PLUS
	65.11	C 02.1	COST	PR OD
1.1. GEOPLATFORM (BUS) -TOTAL	154.00	39.61	335.70	469.70
1.1.1. STRUCTURE	12.74	2.96	24.95	
1.1.1.1. STRUCTURE (PRIMARY)	6.73	c. 65	22.35	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	4.93	. 31	2.60	
	1.29			
1.1.2. THEFFAL CONTROL	2.91	.46	3.91	
1.1.3. ATTITUDE CONTREL	24.72	4.61	33.62	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.54	2.69	22.71	
1.1.3.2. ATTITUDE CONTROL (APCO)	1.08	1.32	11.11	
1.1.4. PEACTION CONTROL	15.39	4.3C	36.26	
1.1.5. FLECTPICAL POWER	15.41	13.34	112.54	
1.1.5.1. SOLAR ARRAY	7.36	9.57	00.69	*
1.1.5.2. PATTERIES	.33	1.14	9.60	
1.1.5.3. POWER COND & DIST	7.73	2.04	24.25	
1.1.4. 1160	9.41	6.02	50.77	
1.1.7. RENDEZVOUS & DECKING				
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. SECKING (MECHANICAL)				
1.1.9. INTEGRATION, ASSEMBLY, & C/D		3.73	31.47	
1.1.9. PROGRAM MANAGEMENT	5.90	2.44	20.90	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.69	2.47	20.96	
1.1.11. SYSTEMS TEST APTICLE	34.53			
1.1.12. SYSTEM TEST DEEPATIONS	7.94			
1.1.13. 655	7.48			
1.1.14. FSF				
1.1.15. FACILITIES	4.37			

1.1. GEOPLATFOR4 (BUS)

1.1.2. THERMAL CONTROL

1.1.3. ATTITUDE CONTROL

1.1.4. PTACTION CONTROL

1.1.9. PROGRAM MANAGEMENT

1.1.11. SYSTEMS TEST ARTICLE

1.1.12. SYSTEM TEST CHERATIONS

1.1.10. TYSTEMS ENGRG & INTEGRATION

1.1.1.1. STRUCTUR: (PRIMARY)

1.1.1.3. STRUCTURE (TCOLING)

1.1.1.2. STRUCTUPE (SECONDARY)

1.1.3.1. ATTITIOS CONTROL (AVIONICS)

1.1.3.2. ATTITUME CONTROL (AMON)

1.1.1. STRUCTURE

ITEM 41 BUS TYPE 4100 CASE LII

. FIRST

UNIT

COST

26.00

3.13

2.02

. 31

. 55

6.10

4.26

1.24

5.05

15.44

11.71

1.25

2.90

6.71

3.34

4.11

. 63

>.23

3.44

POTER

PHASE

TZGD

236.05

13.19

F. 84

4.95

1.40

3.10

32.64

31.14

1.50

20.17

20.27

9.97

4.04

11.02

.41

Conta		
12,75,31,	01/	21/80
PROD Phase	RDT&E PLUS	
COST	PAGD	
248.56	484.61	
13.06 12.50 1.38		
2.44		
27.G6 20.24 6.52		
25.96		
70.74 51.96 5.56 13.22		*
30.08		
14.63 12.63 2.60		

1.1.5. ELFCTRICAL POWER 1.1.5.1. SOLAP AGRAY 1.1.5.2. BATTERIES 1.1.5.3. POMER COND & DIST 1.1.A. TTEC 1.1.7. PENDETVUUS & DECKING 1.1.7.1. PENDEZYOUS (AVICAISS)

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960SM)

-TOTAL

24. 0 19.45 1.1.7. ?. DOCKING (MECHANICAL) 4.75 1.1.P. THITEGRATION, ASSEMBLY, & C/D

> 4.26 21.89

40.85

3.06

16.26

23.23

15.49

1.1.13. GSE

12.24 12.52

1.1.14. FSE

1.1.15. FACILITIES

5.25

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

16.60 5.00

			12.25.31.	01/21/60
	ITEM 42 BUS TYPE 4	10° CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
	ROTGE PHASE	FIRST .	PHOD PHASE	ROTEE PLUS
	COST	C 02 1	COST	PROD
1.1. GEOFLATFORM (BUS) -TOTAL	215.76	47.08	208.96	427.72
1.1.1. STRUCTURE	11.94	2.24	9.95	
1.1.1.1. STRUCTURE (PRIMARY)	5.16	1.94	8.59	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	4.92	• 31	1.36	
TOTAL TARGET OF THE SELECTION	• ~ 9			
1.1.2. THERMAL CONTROL .	3.00	.56	2.24	
1.1.3. ATTITUDE CONTROL	31.02	4.53	20.11	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.77	3.11	13.61	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.30	1.42	0.36	
1.1.4. REACTION CONTROL	45.49	2.00	3.67	
1.1.5. ELECTRICAL FOWER '	21.23	15.94	70.60	
1.1.5.1. SOLAR APPAY	9.47	11.71	>1.90	
1.1.5.2. BATTERIS	• • 1	4.25	5.56	
1.1.5.2. 20.18 COND E DIST	· 15	2.47	13.17	
1.1.4. 1757	10.76	7.53	33.64	
1.1.7. 2-MDEZVOUS & DOCKING	67.56	3.60	17.23	*
1.1.7.1. PENDEZVOUS (AVIENTES)	19.76	2.65	11.75	
1.1.7.2. DOCKING (PECHANICAL)	2.14	1.23	5.47	
1.1.º. INTEGRATION, ASSEMBLY, 5 C/O		4.40	19.53	
1.1.9. PERCEAM MINAGEMENT	2.94	2.,3	13.02	
1.1.10. SYSTEMS ENGAG & INTERRATION	21.13	3.00	13.07	
1.1.11. SYSICHS TEST APTICLE	4.007			
1.1.12. SYSTEM TIST OF PATIONS	17.14			
1.1.13. GSE	12.38			
1.1.14. ***				
1.1.15. FACILITIES	4.54			

16.00 5.00

			12.25.31.	01/21/6
11	EM 43 BUS TYPE 4	INE CASE III		
GENSTATIONARY PLATFORM PROGRAM COSTS (1	960SM)			
	ROTEE	FIRST	PROD	ROTEE
	COST	COST	COST	PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	225.59	49.54	219.89	445.58
1.1.1. STPUCTURE	13.54	3.42	15.10	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.11	13.61	
.1.1.2. STRUCTURE (SECONDARY)	4.92	.31	1.36	
.1.1.3. STRUCTURE (TCOLING)	1.59			
1.1.2. THERMAL CONTROL	3.20	.50	2.24	
.1.3. ATTITUDE CONTROL	31.54	4. +6	22.10	
.1.3.1. ATTITUDE CONTROL (AVIONICS)	37.16	3.51	15.56	
.1.3.2. ATTITUDE CONTROL (AMCD)	1.39	. 1.47	6.53	
.1.4. PEACTION CONTROL	16.35	2.24	10.10	
.1.5. SUFCIRICAL POWER	20.24	15.43	70.70	
1.11. SCLAR ARRAY	9.97	11.71	51.46	
.1.5.2. MATTERIES	•41	1.25	: • : •	
.1.5.3. POLER COND & DIST		2.47	.3.1+	
.1.A. TTCC	12.76	7.55	33.64	
.1.7. PINDEZVOUS & DOCKING	27.96	3.00	17.23	
.1.7.1. FENDERVOUS (AVIONICS)	17.73	2.63	11.75	
.1.7.2. DOCKING (PECHANICAL)	9.16	1.23	5.47	
.1.4. INTEGRATION, ASSEMBLY, 6 C/O		4.63	20.55	
.1.7. PROGRAM MANAGEMENT	7.13	3.04	13.70	*
.1.10. SYSTEMS ENGRG & INTEGRATION	21.59	3.24	14.34	
.1.11. SYSTEMS TEST ARTICLE	43.21			
L.1.12. SYSTEM TEST OPERATIONS	15.70			
.1.13. 655	12.34			
1.1.14. FSE				
1.1.15. FACILITIES				
4010170 - 401611113	• • •			

STEPH 44 BUS TYPE 41VB CASE III   GEORGIATIONARY PLATFORM PROGRAM COSTS (1980)AN   PROD				11.41.30.	01/21/80
POTEE   FIRST   PROD   PROD   PROS   PROD		ITEM 44 BUS TYPE 4	LVB CASE III		
###SE UNIT PRASE PLUS  1-1. GEOPLATFORM (BUS) -TOTAL 107.05 41.02 349.01 502.07  1-1.1. STOUCTURE 13.56 3.43 20.00  1-1.1. STOUCTURE (PRIMARY) 7.04 3.12 20.29  1-1.1. STRUCTURE (PRIMARY) 4.93 .11 2.50  1-1.1. STRUCTURE (FORMARY) 2.91 4.00 3.91  1-1.2. THERMAL CONTROL 24.92 4.20 35.41  1-1.3. ATTITUDE CONTROL 24.92 4.20 35.41  1-1.3. ATTITUDE CONTROL 25.91 2.00 2.00  1-1.3. STRUCTURE (FORMARY) 2.91 2.00 2.00  1-1.3. STRUCTURE (FORMARY) 1.11 1.34 1.33 1.25  1-1.3. STRUCTURE (FORMARY) 1.11 1.34 1.33 1.25  1-1.3. STRUCTURE (FORMARY) 1.11 1.35 1.12.57  1-1.3. STRUCTURE (FORMARY) 1.11 1.30 1.12.57  1-1.3. STRUCTURE (FORMARY) 1.12.57	GENSTATIONARY PLATFORM PROGRAM COSTS	(19605M)			
1.1. GEOPTATEGR* (BUS)		POTEE	FIRST		
1.1. GEOPLATFOR* (BUS)					
1.1.1. STOUCTURE 1.1.1.1. STRUCTURE 1.1.1.1. STRUCTURE 1.1.1.1. STRUCTURE 1.1.1.1. STRUCTURE 1.1.1.1. STRUCTURE 1.1.1.1. STRUCTURE 1.1.1.2. STRUCTURE (SECOMDARY) 1.1.3. STRUCTURE (SECOMDARY) 1.1.5. STRUCTURE (SECOMDARY) 1.1.6. ATTITUDE CONTROL 2.91 2.91 2.40 2.91 2.40 3.91 2.11.3. ATTITUDE CONTROL 24.92 4.20 35.41 2.13. ATTITUDE CONTROL 24.92 4.20 35.41 2.13. ATTITUDE CONTROL 25.81 25.81 25.80 26.10 1.1.3. ATTITUDE CONTROL 25.81 25.81 25.80 26.10 1.1.3. ATTITUDE CONTROL 25.81 25.81 25.80 26.10 1.1.5. ELECTRICAL POWER 15.42 15.42 15.43 16.44 26.60 17.43 17.44 26.60 17.52 17.74 26.60 27.77 27.74		COST	Cast	COST	PRUD
	1.1. GEOPLATFOR" (BUS) -TOTAL	157.05	41.02	345.91	502.97
1.1.1.2. CTRUCTIBE (CRCNOBARY)	1.1.1. STRUCTURE				
1.1.1.1. STRUCTURE (TEDLING)  1.1.2. THEOPAL CENTROL  1.1.3. ATTITUDE CONTROL  1.1.4. PRACTION CONTROL  1.1.5. ELECTRICAL POWER  1.1.5. ELECTRICAL					
1.1.2. THEOPAL CONTROL 1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3.3.2. ATTITUDE CONTROL 1.1.3.3.3.			•31	2.50	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3.3. B.69 1.1.4. PEACTION CONTROL 1.1.5.1. SOLAR ARPAY 1.1.5.1. SOLAR ARPAY 1.1.5.1. SOLAR ARPAY 1.1.5.2. ATTITUDE COND E DIST 1.1.5.3. POWER COND E DIST 1.1.5.3. POWER COND E DIST 1.1.5. TIEC 1.1.5. TIEC 1.1.6. TIEC 1.1.7. RENDEZVOUS E DECKING 1.1.7.1. PEND.ZVOUS (AVICNICS) 1.1.7.2. DOCKING (MECHANICAL) 1.1.6. INTEGRATION, ASSEMBLY, E C/O 1.1.9. PROCESSING (MECHANICAL) 1.1.9. PROCESSING E INTEGRATION 1.2.5. SYSTEMS ENGRG E INTEGRATION 1.2.5. SYSTEMS TEST APTICLE 1.1.11. SYSTEMS TEST APTICLE 1.1.12. SYSTEMS TEST APTICLE 1.1.13. GSE 1.1.14.15. SYSTEMS TEST APTICLE 1.1.15. SYSTEMS TEST APTICLE 1.1.15. SYSTEMS TEST APTICLE 1.1.15. GSE 1.1.15. GSE 1.1.15. SYSTEMS TEST APTICLE 1.1.15. GSE 1.1.15. SYSTEMS TEST APTICLE 1.1.15. GSE 1.1.15. GSE 1.1.15. SYSTEMS TEST APTICLE 1.1.15. GSE 1.1.15. GS	1.1.1.3. STRUCTURE (TOOLING)	1.79			
1.1.3.1. ATTITUD: CONTROL (AVIONICS) 1.1.3.2. ATTITUD: CONTROL 1.1.3.2. ATTITUD: CONTROL 1.1.3.2. ATTITUD: CONTROL 15.52 4.59 38.69 1.1.5. ELECTRICAL POWER 15.42 13.35 112.57 1.1.5.10. SOLAR ARPAT 7.36 9.57 80.69 1.1.5.3. POWER COND E DIST 7.74 2.64 22.25 1.1.5. TIEC 8.41 6.02 36.77 1.1.7. RENDEZVOUS E DECRING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL) 1.1.6. INTEGRATION, ASSEMBLY, E C/O 1.1.9. PROGRAM MANAGEMENT 5.73 2.50 21.62 1.1.10. SYSTEMS ENGRG E INTEGRATION 12.65 1.1.11. SYSTEMS TEST APTICLE 35.87 1.1.12. SYSTEM TEST OPERATIONS 8.28 1.1.13. GSE 4.28 4.59 32.61 24.10 24	1.1.2. THERPAL CONTROL	2.91	.46	3.91	
1.1.3.1. ATTITUDE CONTROL (AVIANCES)   23.81   2.86   24.10     1.1.3.2. ATTITUDE CONTROL   15.52   4.54   38.69     1.1.4. PEACTION CONTROL   15.52   4.54   38.69     1.1.5. ELECTRICAL POWER   15.47   13.35   112.57     1.1.5.1. SOLAR ARRAY   7.36   9.27   80.69     1.1.5.2. RATTERIES   .33   1.14   9.60     1.1.5.3. POWER COND & DIST   7.74   2.64   22.29     1.1.5. TIEC   8.41   6.02   36.77     1.1.7. RENDEZVOUS & DOCKING     1.1.7.1. RENDEZVOUS & AVIONICS     1.1.7.2. DOCKING (MECHANICAL)	1.1.3. ATTTTUDE CONTROL	24.92	4.20		
1.1.3.2. ATTITUDE CONTROL  1.1.4. PEACTION CONTROL  15.62  4.55  38.69  1.1.5. ELECTRICAL POWER  15.47  13.35  112.57  1.1.5.2. BATTERISS  .33  1.14  9.60  1.1.5.3. POWER COND E DIST  7.76  2.64  22.26  1.1.5. TIEC  8.41  6.02  36.77  1.1.7. RENDEZVOUS E DECKING 1.1.7.2. DECKING (MECHANICAL)  1.1.7.2. DOCKING (MECHANICAL)  1.1.8. INTEGRATION, ASSEMBLY, 8 C/O  3.65  3.65  3.65  3.10. SYSTEMS ENGRG E INTEGRATION  12.65  1.1.10. SYSTEMS ENGRG E INTEGRATION  1.1.11. SYSTEMS TEST APPICLE  35.67  1.1.12. SYSTEM TEST OPERATIONS  8.08  1.1.13. GSE  4.08	1.1.3.1. ATTITUDE CONTENT (AVIONICS)				
1.5. ELECTRICAL POWER   15.47   13.35   112.57   80.69   1.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5.1.5	1.1.3.2. ATTITUDE CONTROL (AMCD)	1.11	1.34	11.31	
1.1.5.1. SOLAR ARRAY 1.1.5.2. SATTERIES 1.1.5.2. RATTERIES 1.1.5.3. POWER COND & DIST 7.74 2.64 22.29 1.1.5. TIEC P.41 6.02 9.67 1.1.7. RENDEZVOUS & DECKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL) 1.1.8. INTEGRATION, ASSEMBLY, & C/O 3.65 32.43 1.1.9. PROGRAM MANAGEMENT 5.23 2.56 21.62 1.1.10. SYSTEMS ENERG & INTEGRATION 12.65 2.50 21.62 1.1.12. SYSTEMS TEST AFTICLE 35.87 1.1.12. SYSTEM TEST OPERATIONS 8.28	1.1.4. PEACTION CONTROL	15.62	4.55	38.69	
1-1.5-1. SOLAR ARPAY	1.1.5. ELSCIRICAL POWER	15.42	13.35	112.57	
1.1.5.2. BATTERIES 1.1.5.3. PCWER COND & DIST 7.74 2.66 22.29  1.1.5. TIEC P.41 6.02 96.77  1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)  1.1.6. INTEGRATION, ASSEMBLY, & C/O 3.65 32.43  1.1.9. PROGRAM MANAGEMENT 5.93 2.50 21.62  1.1.10. SYSTEMS ENGRG & INTEGRATION 12.65 2.50 21.62  1.1.12. SYSTEMS TEST APTICLE 35.87  1.1.12. SYSTEM TEST OPERATIONS 4.98  1.1.13. GSE		7.36	9.57		
1.1.5. TTEC 8.41 6.02 36.77  1.1.7. RENDEZVOUS E DECKING 1.1.7.1. PENDLZVOUS LAVIONICS) 1.1.7.2. DOCKING (MECHANICAL)  1.1.6. INTEGRATION, ASSEMBLY, 6 C/O 3.65 32.43  1.1.9. PROGRAM MANAGEMENT 5.93 2.56 21.62  1.1.10. SYSTEMS ENGRG & INTEGRATION 12.65 2.50 21.62  1.1.11. SYSTEMS TEST APTICLE 35.87  1.1.12. SYSTEM TEST OPERATIONS 8.28  1.1.13. GSE ".08	1.1.5.2. BATTERIES		2 No. 10 Table 2		
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)  1.1.9. INTEGRATION, ASSEMBLY, & C/O  1.1.9. PROGRAM MANAGEMENT  1.1.9. PROGRAM MANAGEMENT  1.1.10. SYSTEMS ENERG & INTEGRATION  12.65  1.1.11. SYSTEMS TEST APTICLE  1.1.12. SYSTEM TEST OPERATIONS  1.1.13. GSE  4.08	1.1.5.3. POWER COND & DIST	7.74	2.64	22.29	
1.1.7.1. RENDET VOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)  1.1.0. INTEGRATION, ASSEMBLY, 6 C/O  1.1.0. PROGRAM MANAGEMENT  1.1.0. SYSTEMS ENGRG & INTEGRATION  1.2.65  1.1.11. SYSTEMS TEST APTICLE  1.1.12. SYSTEM TEST OPERATIONS  1.1.13. GSE  -08	1.1.5. *********************************	e.41	6.02	<b>36.77</b>	
1.1.7.?. DOCKING (MECHANICAL)  1.1.0. INTEGRATION, ASSEMBLY, 8 C/O  1.1.0. PROGRAM MANAGEMENT  5.93  2.56  21.62  1.1.10. SYSTEMS ENGRG & INTEGRATION  12.65  2.50  21.62  1.1.11. SYSTEMS TEST APPICLE  35.87  1.1.12. SYSTEM TEST OPERATIONS  8.98  1.1.13. GSE  4.08	1.1.7. RENDEZVOUS & DECKING				
1.1.0. SYSTEMS FIRST OPERATIONS 1.1.1.0. SYSTEMS TEST OPERATIONS 1.1.1.1. SYSTEM TEST OPERATIONS 1.1.1.1. GSE 3.65 32.43 2.50 21.62 21.62 21.62 21.62					
1.1.9. PROGRAM MANAGEMENT 5.93 2.56 21.62 1.1.10. SYSTEMS ENERG & INTEGRATION 12.65 2.50 21.62 1.1.11. SYSTEMS TEST APTICLE 35.87 1.1.12. SYSTEM TEST OPERATIONS 8.08 1.1.13. GSE 4.08	1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.10. SYSTEMS ENGRG & INTEGRATION 12.65 2.50 21.62 1.1.11. SYSTEMS TEST APTICLE 35.87 1.1.12. SYSTEM TEST OPERATIONS 8.08 1.1.13. GSE 4.08	1.1.e. INTEGRATION, ASSEMBLY, & C/O		3.65	32.43	
1.1.12. SYSTEMS TEST APTICLF 35.87 1.1.12. SYSTEM TEST OPERATIONS 8.08 1.1.13. GSE08	1.1.9. PROGRAM MANAGERENT	5.99	2.56	21.62	
1.1.12. SYSTEM TEST OPERATIONS H.OH 1.1.13. GSE ".OH	1.1.10. SYSTEMS ENERG & INTEGRATION	12.65	2.50	21.62	
1.1.13. GSE08	1.1.11. SYSTEMS TEST APTICLE	35.87			
	1.1.12. SYSTEM TEST OPERATIONS	9.08			
	1.1.13. 656	~.08			
1.1.14. FSE	1.1.14. 556				
1.1.15. FACILITIES 5.33	1.1.15. FACILITIES	5.33			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE & UNITS PRODUCED

a.cc 10.00

			11.41.30.	01/21/80
	ITEM 45 BUS TYPE 4	11 32A3 BD1		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1986SM)			
	20165	FIRST	PROD	ROTEE
	PHASE CJST	UKIT C65T	PMASE COST	PLUS PROD
	(331	6031	COST	PROD
1.1. GEOFLATFORM (BUS) -TOTAL	147.59	30.11	321.36	476.98
1.1.1. ********************************	11.96	2.25	10.98	
1.1.1.1. STRUCTURE (PPIMARY)	6.17	1.94	16.36	
1.1.1.2. STRUCTURE (SECONDARY)	4.73	.31	2.60	
1.1.1.3. STRUCTUPE (TOOLING)	. 96			
1.1.2. THERMAL CONTROL	2.91	.46	3.91	
1.1.3. ATTITUS CONTROL	24.45	3.70	31.69	
1.1.7.1. ATTITUDE CONTECL (AVIONICS)	23.42	2.50	21.65	
1.1.3.2. ATTITUGE CONTROL (AMCO)	1.03	1.20	10.23	
1.1.4. PFACTION CONTREL	15.07	3.41	33.00	
1.1.5. FLECTRICAL POWER.	12.41	13.34	112.54	
1.1.5.1. SOLAR ARRAY	7.36	9.57	60.69	
1.1.5.2. 941150125	.33	1.14	9.60	
1.1.5.3. POWER COND & DIST	7.73	2.04	22.25	
1.1.6. *********************************	6.41	6.02	50.77	
1.1.7. PENDEZVOUS E DGCKING 1.1.7.1. PENDEZVOUS (AVICNICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		. 3.57	30.13	
1.1.9. PROCKAM MANAGEMENT	5.79	2.35	20.04	
1.1.1C. SYSTEMS FNGRG & INTEGRATION	12.44	2.36	20.04	
1.1.11. SYSTEMS TEST ARTICLE	31.35			
1.1.12. SYSTEM TEST OPERATIONS	7.50			
1.1.13. 656	7.82			
1.1.14. FSF				
1.1.15. 5401617165	4.49			

Table I-2. Nominal Traffic Model Cost Runs, Could
SYSTEM LIFF; UNITS PRODUCED 16.00 5.70

			12.25.31.	01/21/80
11	TER 46 BUS TYPE 4	290 CASE 111		
GENSTATIONARY PLATFORM PROGRAM COSTS (	198056)			
	PHASE	FIRST	PR GD PHA SE	RDT GE PLUS
	COST	COST	COST	PAGG
1.1. GEOPLATFORM (BUS) -TOTAL	2 30 . 2 9	53.71	238.39	468.69
1.1.1. STOUCTURE	12.00	2.26	10.05	
1.1.1.1. STRUCTURE (PRIMARY)	6.19	1.95	E.67	
1.1.1.7. STRUCTURE (SECONDARY)	4.95	.31	1.36	
1.1.1.3. STPUCTURE (TCOLING)	. 67			
1.1.2. THERMAL CONTROL	3.10	•>5	2.44	
1.1.3. ATT: TUDE CONTROL	32.75	5.59	25.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.82	4.19	18.60	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.43	1.50	6.65	
1.1.4. PEACITON CONTROL	19.76	5.34	23.68	
1.1.4. SIECTRICAL POWER	20.27	15.94	70.74	
1.1 SOLAR ARRAY	9.97	11.74	51.96	
1.1.5.2. "41769155	.41	1.25	5.56	
1.1 POWER COND & DIST	0.86	2.48	13.22	
1.1.6. 1150	11.02	E-71	36.66	
1.1.7. PFMDEZVOUS & DUCKING	0	3.34	14.83	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.85	2.71	12.03	
1.1.7.2. DOCKING (MECHANICAL)	4.95	.03	2.00	
1.1.F. INTEGRATION, ASSEMBLY, & C/O		5.02	22.20	
1.1.9. PODGRAM MANAGEMENT	4.17	3.35	14.85	*
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.55	3.51	15.60	
1.1.11. SYSTEMS FEST APTICLE	46.95			
1.1.12. SYSTEM TEST OFFRATIONS	11.65		*	
1.1.13. 658	17.32			
1.1.14. FSE				
1.1.15. SOCIUTIES	4.67			

6.00 4.00

			125.31.	01/21/80
	ITEM 47 BUS TYPE 43	NC . CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(196CSM)			
	KOTEE	FIRST	PROD	RDTSE
	PHASE	UNIT	PHASE	PLUS
	COST	1200	CUST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	256.53	66.39	234.60	498.18
	14.38	3.60	13.01	
1.1.1. STRUCTURE (PRIMARY)	7.11	3.24	11.69	
1.1.1.2. STRUCTUPE (SECONDARY)	5.60	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	1.67			
1.1.2. THEPHAL CONTROL	3.22	.61	2.20	
	43.47	7.07	25.53	
1.1.3. ATTITUDE CONTROL	31.82	5.45	19.69	
1.1.3.1. ATTITUOS CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCO)	1.65	1.62	5.64	
1.1.4. PEACTION CONTROL	21.04	7.06	25.50	*
and a second course	23.76	17.31	69.71	
1.1.5. ELECTRICAL PUWER 1.1.5.1. SOLAN ARRAY	41.44	14.01	50.57	
1.1.1.2. PAIT, 11"5	.42	01	5.01	
1.1 Prais CIND & DIST	11.40	3.04	13.33	
1.1.4. 7766	11.33	10.10	37. 1	
1.1.7. DEPOSITION & BOOKING	c: •1 °	20:54	12.75	
1.1.7 or of typus (avirules)	23.04	2.1:	10.41	
1.1.7.2. DECKING (PERPANTEAL)	5.11	. 60	2.37	
1.1 INTERPATION, ASSEMBLY. E C/O		0.24	22.40	9,0
1.1.c. OFOGRAM MANAGERSAT	9.13	4.14	14.93	OF POOR Q
1.1.17. SYSTEMS BOND & INTERPATION	23.16	4.34	15.00	liva Yor
1.1.11. SYSTEM TEST ARTICLE	57.91			20 7 7
1.1.12. TYSTE 1 ILST OPERATIONS	.4.33			74.C
1.1.13. 655	.3.24			ORIGINAL PAGE IS OF POOR QUALLTY
1.1.13. 107				O.
1.1.1%. [60]LITE'S	1.11		*	

1-49

Table I-2. Nominal Traffic Model Cost Runs, Contd SYSTEM LIFFE UNITS PRODUCED

			12.25.31.	01/21/0
	ITER 46 BUS TYPE 430E	RE CASE III		
GFOSTATIONARY PLATFORM PROGRAM COSTS (1980SM)	1986581			
	P. 716E F14SE C05T	F1AST ONIT	PROD PHASE COST	RDTGE PLUS PROD
1.1. 3EOPLATFORM (BUS) -TOTAL	243.79	57.41	207.23	451.02
PUCTURE	14.23	3.40	12.56	
1.1.1.2. TRUCTURE (PRIMARY) 1.1.1.2. TRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TGOLING)	7.55 5.61 1.59	.37	11.24	
1.1.2. THEPMAL CONTROL	1111	\$6.	2.00	
1.1.3. ATTITUDE CONTRCL	32.11	14.4	19.89	
	30.62	3.98	14.36	
1.1.4. PFACTION CONFEL	16.99.	2.63	9.51	
39300 1401010010	17.10	19.23	46.45	
1.5.1	77.17	14.01	50.57	
.1.4.2. 9ATTERIES	24.	10.1	5.61	
9			13.51	
1.1.5. TTEC	21.12	***	32.82	
1.1.7. PTHOLZVTUS & DOCKING	25.19		14.97	
1.1.7.1. RENDEZUBUS (AVIENIES) 1.1.7.2. DOCKING (MECHANICAL)		62.5	10.16	
1.1.P. INTEGRATION, ASSTRALY, E C/O		30	19.37	
1.1.9. PPOCEAM MANAGEMENT	10.6	3.56	12.41	
1.1.10. SYTEMS :NOHG & INIGGRATION	17.55	3.70	13.56	
1.1.11. TYTISH T.ST ARTICLE	20.00			
1.11.12. evil v j. v v.				
				4
1.1.15. (**)				
1.1.1. (10,177)	•			

1.1.15. FACILITIES

Table I-2. Nominal Traffic Model Cost Runs, Contd

E E S E S E S E S E S E S E S E S E S E				
			11.41.30.	01/21/80
	ITEM 49 BUS TYPE 4	308 CASE III		\•
GEDSTATIONARY PLATFORM PROGRAM COSTS	(1980sm)			
	RD T & E	FIRST	PROD	ROTEE
	PHASE	UNIT		PLUS
	COST	COST	COST	PR CD
1.1. GEDPLATEGRM (BUS) -TOTAL	171.73	47.40	324.08	500.36
1.1.1. STRUCTURE	14.22	3.47	23.53	
1.1.1.1. STRUCTURE (PPIMARY)		3.11	21.33	
1.1.1 CINUCIURE (SECONDARY)		• 37	2.50	
Telefese Sikaciake (Laaring)	1.59			
1.1.2. THERPAL CONTROL	3.02	•51	3.51	
1.1.3. ATTITUDE CONTROL	25.37	4.04	31.82	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.16	3.25		
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.39	9.55	
1.1.4. REACTION CONTROL	16.10	5.26	46.08	
1.1.5. ELECTRICAL POWER	10.25	16.35	112.21	
1.1.5.1. TOLAR ARRAY	7.59			
1.1.5.2. PATTERICS	• 33			
1.1.5.3. POWER COND & DIST	9.35	3.20	22.52	
1.1.6. TTEC	9.03	7.23	49.62	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIGNICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.P. INTEGRATION, ASSEMBLY, & C/O		4.50	30.65	
1.1.9. PROGRAM MANAGEMENT	6.34	3.00	20.57	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.62	3.00	20.57	
1.1.11. SYSTEMS TEST ARTICLE	41.98			
1.1.12. SYSTEM TEST OPERATIONS	9.45			
1.1.13. 655	4.56			
1.1.14. FSE				
	1.1. GEDPLATEORM (BUS) —TOTAL  1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PPIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TODLING)  1.1.2. THEPMAL CONTROL 1.1.3. ATTITUDE CONTROL (AVIONICS) 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERICS 1.1.5.3. POWER COND & DIST  1.1.6. TIEC 1.1.7. RENDEZVOUS & DOCKING 1.1.7.2. OPCKING (MECHANICAL) 1.1.9. INTEGRATION, ASSEMBLY, & C/O 1.1.9. PROGRAM MANAGEMENT 1.1.10. SYSTEMS ENGRG & INTEGRATION 1.1.11. SYSTEMS TEST ARTICLE 1.1.12. SYSTEM TEST OPERATIONS 1.1.13. GSF	### ROTEE PHASE COST  1.1. GEOPLATEORM (BUS) — TOTAL 171.73  1.1.1. STRUCTURE 14.22  1.1.1. STRUCTURE (PPIMARY) 7.23  1.1.1.2. STRUCTURE (SECONDARY) 5.60  1.1.3. STRUCTURE (TODLING) 1.29  1.1.2. THEPPAL CONTROL 25.37  1.1.3. ATTITUDE CONTROL (AVIONICS) 24.18  1.1.3.1. ATTITUDE CONTROL (ANGD) 1.19  1.1.4. REACTION CONTROL (ANGD) 1.19  1.1.5. ELECTRICAL POWER 16.5  1.1.5.1. SOLAR ARRAY 7.68  1.1.5.2. RATTERICS 9.35  1.1.6. TIEC 8.03  1.1.7. RENDETYOUS E DOCKING 1.1.7.2. DOCKING (MECHANICAL)  1.1.7. RENDETYOUS (AVIGNICS) 1.1.7.2. DOCKING (MECHANICAL)  1.1.9. PROGRAM MANAGEMENT 6.34  1.1.10. SYSTEMS FNGRG & INTEGRATION 13.62  1.1.11. SYSTEMS TEST ARTICLE 41.98  1.1.12. SYSTEMS TEST ARTICLE 41.98  1.1.12. SYSTEMS TEST ARTICLE 41.98  1.1.13. GSF 3.56	RDTEE   P4ASE   UNIT   COST   CUST	ROTE   PHASE   COST   COST

6.19

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.231.	01/21/60
	ITEM SO BUS TYPE 4	BLC CASE 111		
GEOSTATIONARY PLATFORM PROGRAM COST	S (19601M)			
	F2155	FIRST	PROD	*****
	PAASE	UNIT	PHASE	RDTEE
	COST	CUST	COST	PLUS PRGD
1.1. SERPLATEGRA (BUS) -TOTAL				7400
	245.14	7: 2	274.06	519.22
1.1.1. STRUCTURE	14.45	2		
1.1.1.1. STRUCTUPE (DEIMARY)	7.16	3.68	13.26	
1.1.1.2. STRUCTURE (SECONDARY)	3.00	3.31	11.97	
1.1.1.3. STRUCTURE (TUDLING)	1.72	•37	1.32	
	• • • •			
1. 1.2. THE PMAL CONTROL	3.22	4.1	4	
	3.00	.61	2.20	
1.1.3. ATTITUDE CONTROL	34 . 79	8.91		
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.93		32.16	
1.1.3.2. ATTITUDE CONTENT (AMCD)	1.89	7.16 1.74	22.06	
	••••	1.74	0.30	
1.1.4. PRACTION CONTROL	45.29	14		
		16.10	50.34	
1.1.5. FLECTRICAL POWER	23.64	19.27		
1.1.5.1. SOLAR ARRAY	11.44	14.01	69.56	
1.1.5.2. PATTEPIES	• 42	1.61	>C.57	
1.1.5.3. POWER COND & DIST	11.79		5.61	
		3.05	13.17	
1.1.6. TTEC	11.35	10.50		
		10.50	37.41	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DCCKING (PECHANICAL)				
1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-		
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.10		
1.1.4.	la .	7.10	25.61	
1.1.9. PROGRAM MANAGEMENT	A . 35	4.73		
1 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	• • • • • • • • • • • • • • • • • • • •	4.73	17.00	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.73	4.47	.=	
1 1 11	274.5	4.97	17.93	
1.1.11. SYCIEMS TEST ARTICLE	64.22			
1 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
1.1.12. SYSTEM TEST OPERATIONS	15.39			
1.1.13				
1.1.13. 656	11.29			
1-1-14- 555				
1.1.14. FSS				
1.1.15 - 54011 17100				
1.1.15. FACILITIES	13.30			

Table I-2. Nominal Traffic Model Cost Runs, Contd

16.00 4.72

SYSTEM LIFE; UNITS PRODUCED

01/21/80			Rote	PKCD	481.03													ORI	GIN POO	AL R Q	PA( VA)	GE	18				
12,25,31,			20 4 2 7 7	נניזן	67.627	29.5	. 30	1.32	2.23	23.54	14.14	23.39	41.04	50.57	0	13.11	37.41	12.79	10.41	21.47	16.31	15.03					
	43151 COLL 111		FIRST.	1200	03.64	2.66	2.33	:		3.0	5.62 1.56	9.4	10.16	14.01	1.52	3.03	10.50	3.54	2.66	5.95	3.57	4.10					
	"IT." 31 nug (TP3	1,15,111)	F447		451.00	+1.61	67.4		3.22	33.33	31.50 1.58	50.64	23.63	11.44		11.76	11.39	25.15	5.11		9.63	11.05	55.51	13.7.	11.02		7.01
		GENTRATIONARY PLATFORM POCREAM COSTS (176018)			I.1. OF THE FEGGR (FULS) -TOTAL		;	[+1-1-3- 1] (2.11-3)   TANDERS	1.1.2. FHSF ML CONT. OL		1.1.3.2. ATTITUDE CONTROL (AVIONICS)	1.1.4. REACTION CONTROL	1.1.5. FIFCTPICAL POWER .	1.1.5.1. SOLAP APPAY	1.1.5.2. BATTERIES .	1.1.5.3. POPER COND & DIST	1.1.6. 7750	1.1.7. PENDEZVOUS & DOCKING	1-1-7-1- PENDEZYOUS (AVICALS) 1-1-7-2- DICKING (RECHANICAL)	1.1.9. INTEGRATION, ASSEMBLY, E C/O	1.1.9. PROGRAM MANAGEMENT	1.1.10. SYSTEMS ENGRG & INTEGRATION	1.1.11. TYSTEMS TEST ARTICLE	1.1.12. SYSTEM T.ST OPERATIONS	1,11.13. 607	1.1.14. 575	1.1.15. PORUTES

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/80
	ITEM 52 BUS TYPE 4	3GE CASE 111		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1963sn)			+
	FDT65	FARST	PROD	
	PHASE	UNIT	PHASE	RDTEE
	COST	CUST	CUST	PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	239.16	55.71	201.12	
1.1.1. STRUCTURE				440.28
1.1.1.1. TOUCTHOE EDDIMARY	13.15	2.67	9.64	
1.1.1.2. STRUCTURE (SCONINADA)	5.47	2.30	6.32	
1.1.1.3. STRUCTUPE (TEGLING)	· · · · · · · · · · · · · · · · · · ·	• 37	1.32	
	:.54			
1.1.2. THERMEL CONTROL	3.13			
	• • • • •	• > 5	2.00	
1.1.3. ATTITUDE CENTROL	31.70	. 76		
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	37.35	:.20	16.77	
1.1.2.2. ATTITUD- CHITPUL (AMCD)	1.43	3.70	13.37	
1 1 / 20/20	,	4.50	>.41	
1.1.4. PEACTION CONTROL	16.40			
1.1.6 51444444		4.43	e.79	
1.1 ELECTRICAL POWER	43.7?	19.27		
1.1.5.1. SOLAP APPAY		14.01	69.65	
1.1.4.7. PATT RIS	. 4 >	1.01	50.57	
1.1.5.3. POWER COND & DIST	11.00	3.07	3.01	
1.1.4 ****		3.07	13.27	
1.1.6. TTEC	11.12	9.07		
		7.09	32.82	
1.1.7. RENDEZVOUS & DECKING	24.46	4.15		
1.1.7.1. RENDEZVUUS (AVIONICS)	17.35		14.97	
1.1.7.2. DOCKING (MECHANICAL)	3.75	2.60	16.16	
		1.35	4.07	
1.1.e. INTEGRATION, ASSEMBLY, & C/D		<b>5</b> 23		
		5.21	16.80	
1.1.9. PROGRAM MANAGEMENT	7.40			
	,	3.47	12.53	
1.1.10. SYSTEMS -NGRG & INTEGRATION	62.42	2		
	22.012	3.64	13.15	
1.1.11. SYSTEMS TEST ARTICLE	42.00			
1.1.12. SYSTEM TEST OPERATIONS	12.33			
1.1.1.	,			
1.1.17. GYE	12.12			
	▲ F <sub>0</sub> ● ₹ F			
1.1.14. FSE				
1 1 16 61411				
1.1.15. FACILITIES	5 44			

Table I-2. Nominal Traffic Model Cost Runs, Contd

CVCTEM	TECI	UNITS	<b>BE GUNCLD</b>
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00.b 00.6

			11.41.30.	01/21/60
11	EM 53 BUS TYPE 43	IEB CASE III		
GECSTATIONARY PLATFORM PROGRAM COSTS (	960\$M)			
GEOSTATIONARY PLATFORM PROSEST			PROD	RDT&E
	43 LEE	FIRST	PHASE	PLUS
	PHASE	UNIT	COST	PRCD
	COST	CUST		
1.1. GEOPLATFORM (BUS) -TOTAL	166.73	45.96	315.21	481.94
	13.14	2.60	19.27	
1.1.1. STRUCTURE	1.46	2.30	15.77	
1.1.1.1. STRUCTURE (PRIMARY)	5.60	.37	2.50	
1.1.1.2. STRUCTURE (SECONDARY)	1.07			
1.1.1.3. STRUCTURE (TCGLING)				
1.1.2. THERMAL CONTROL	3.02	.51	3.51	
1.1.2. THE WEAL CONTROL			29.74	
1.1.2. ATTITUDE CONTPCL	25.07	4.34	20.43	
1 1 3 1 ATTITUDE CONTROL (AVIONICS)	23.93	2.9c 1.36	9.31	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.14	1.30	7022	
	15.77	4.00	32.91	
1.1.4. SEACTION CONTROL	13.77	12.55		*
	19.24	16.30	112.21	
1.1.5. FLECTRICAL PUWER	8.53	11.70	60.23	
1.1.5.1. SOLAR ARRAY	.33	1.30	9.48	
1.1.5.7. MATTERIES 1.1.5.3. POWER COND & DIST	9.34	3.20	22.50	
1.1 FUNEY COME A SEC.		7.23	49.62	
1.1.4. 1150	9.69	1.23	17.02	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVICNICS)		-		
1.1.7.2. POCKING (MECHANICAL)			-	
1.1.4. INTEGRATION, ASSEMBLY, & C/O		4.31	29.55	
1.1 INTEGRATIONS ASSESSED			19.70	
1.1.9. PROGRAM MANAGEMENT	6.21	2.07	14.70	
		2.07	19.70	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.34	2.01	2,0.0	
	40.21			
1.1.11. SYSTEMS TEST ARTICLS	40.61			
AND THE TOST OF SATTONS	3.05			
1.1.12. SYSTEM TEST OF PATTONS				
1.1.13. 655	P.39			
Letetie wi				
1.1.14. FSF				
	5.60			
1.1.15. FACILITYES	,,,,,			

Table I-2. Nominal Traffic Model Cost Runs, Contd

CYCTE	4 1 1	FF:	UNIT	5 bs	COUC ED

16.00 4.00

			12.25.31.	01/21/60
	ITEM 54 BUS TYPE 4	SJC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
	ND TES PHASE	FIRST	PROD PHASE	RDT&E Plus
	C051	CGST	COST	PR GO
1.1. GECPLATECRM (BUS) -TOTAL	236.39	71.73	256.44	495.33
1.1.1. ST?UCTURE	13.14	2.66	9.02	
1.1.1.1. STEUCTURE (PRIMARY)	6.47	2.30	3.30	F-
1.1.1.2. STEUCTUPE (SECONGARY)	5.60	.37	1.32	
1.1.1.2. TPUCTUPE (TCOLING)	1.74			
1.1.7. THEPPAL CUNTPOL .	3.?2	.61	2.20	
1.1.3. ATTITUSE CONTROL	34.31	8.21	29.53	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.51	0.51	23.4	
1. 1.3.2. ATTITUDE CONTROL (AMCD)	1.4)	1.70	0.14	
1.1.4. REACTION CONTROL	24.76	14.70	23.00	
1.1 TIECTRICAL POWER .	23.63	19.17	L+.22	
1.1 FOLLY APPAY	11.44	.4.6.	50.57	
1.1.5.2. BATTERIES .	•41	1.52	5.49	
1.1.5.3. POWER COND & DIST	11.7:	3.65	13.16	
1.1.6. 7760	11.38	20.50	37.91	
1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. PENDEZ VOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1. P. INTEGRATION, ASSEMBLY, S C/O		6.70	24.20	
1.1.9. PROGRAM MANAGEMENT	9.17	4.47	16.13	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.33	4.69	16.94	
1.1.11, TYSTEMS TEST ARTICLE	02.57			
1.1.12. CYCICY TEST DPERATIONS	15.47			
1-1-13- 656	11.04			
1.1.14. FSE				
1.1.15. FACILITIES	7.34			

1.1.15. FACILIFIES

0.00 6.00

01/21/80

11.4..30.

	ITEM 55 BUS TYPE 44	NR CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19306M)			
	23709	FIRST	PROD	ROTCE
	PHASE	LNIT	PHASE	FLUS
	COST	LUST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	197.06	60.31	316.94	514.00
1.1.1. STRUCTURE	12.34	3.94	23.70	
1.1.1.1. STRUCTURE (PRIMARY)	7.20	3.52	18.51	
1.1.1.2. STRUCTURE (SECONDARY)	5.20	.42	2.20	
1.1.1.7. STRUCTURE (TOOLING)	1.96			
1.1.2. THERPAL CONTROL	3.14	.57	2.96	
1.1.3. ATTITUDE CONTROL	26.34	5.37	26.20	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.72	3. +0	20.40	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.31	1.47	7.72	
1.1.4. REACTION CONTROL	16.91	6.3c	33.54	
1.1.5. FLECTPICAL POWER	23.12	22.19	116.58	
1.1. T.1. SOLAR ARRAY	10.78	15.77	62.86	
1.1 2. BATTERIES	.34	1.45	10.25	
1.1.5.3. POWER COND & DIST	15.50	4.47	23.46	
1.1.5. *********************************	3.76	8.68	45.60	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. PENDETVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.2. INTEGRATION, ASSEMBLY, & C/O		5.65	29.71	
1.1.9. PROGRAM MANAFRENT	5.73	3.77	19.81	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.85	3.77	19.01	
1.1.11. SYSTEMS TEST ARTICLE	52.77			
1.1.17. SYSTEM TEST OPERATIONS	11.67			
1.1.13. 655	G.36			
1.1.14. FSF				

7.65

I-57

			11.41.30.	01/21/80
	ITEM 57 BUS TYPE 4	443 CASE 111		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1580SM)			
	RDTEE	FIRST	PROD	RUTGE
	P4 A55	UNIT	PHASE	PLUS
	COST	CUST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	1+1.64	50.08	365.20	496.84
1.1.1. STPUCTURE	14.19	3.05	16.03	
1.1.1.1. STRUCTURE (PRIMARY)	6.71	2.63	13.03	
1.1.1.2. STRUCTURF (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	6.20	• 42	2.20	
Teletere Structure (Touting)	1.28			
1.1.2. THERMAL CONTROL	3.14	.57	2.99	
1.1.3. ATT TUDE CONTROL	25.74	5.02	26.40	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.47	3.59	10.85	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.44	7.54	
1.1.4. REACTION CONTROL	16.59	5.87	30.86	
1.1.5. SISCTRICAL POWER	23.31	22.10	116.56	
1.1.5.1. SOLAR ARRAY	13.79	15.77	62.86	
1.1.5.7. 9AITERIES	.34	1.95	10.25	
1.1.5.3. POWER COND 6 DIST	12.19	4.40	23.44	
1.1.5. TTEC	3.96	6.50	45.60	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.º. INTEGRATION, ASSEMBLY, & C/O		5.44	20.61	
1.1.9. PROGRAM MANAGEMENT	6.40	3.63	19.08	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.60	3.63	19.68	
1.1.11. SYSTEMS TEST ARTICLE	50.92			
1.1.12. SYSTEM TEST OPERATIONS	41.43			
1.1.13. 655	7.19			
1.1.14. FSF				
1.1.15. FACILITIES	5.91			

I-58

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

10.00 3.70

			12.25.31.	01/21/60
	ITEM 56 BUS TYPE 44	SHE CASE III		
GENETATIONARY PLATFORM PROGRAM COSTS	(196C1K)			
	*DT 6E	FIFST	PRUD	ROTEE
	MASE	TINU	PHASE	PLUS
	COST	CUST	COST	PROG
1.1. GEOPLATFORM (BUS) -TOTAL	267.95	68.86	190.26	456.24
	14.21	3.06	6.46	
1.1.1. STOUCTURE	5.72	2.04	7.30	
1.1.1.1. STRUCTURE (PRIMARY)	6.23	.42	1.16	
1.1.1.2. STRUCTUPE (SECONDARY) 1.1.1.3. STRUCTUPE (TCOLING)	1.24			
1.1.2. THE PHAL CONTROL	3.23	.02	1.71	
	32.60	6.01	10.62	
1.1.3. ATTITUTE CONTROL	31.23	4.43	12.26	
1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	1.59	1.50	4.37	
1.1.4. REACTION CUNTPOL	47.31	2.94	e.14	
	20.95	25.55	73.67	
1.1.5. ELECTRICAL POWER	14.11	10.43	50.98	
1.1.5.1. SOLAR ARRAY	•43	2.15	5.94	
1.1.5.2. BATTEPIES 1.1.5.3. POWER COND & DIST	15.42	4.47	13.75	
1.1 PUNER COND & SIST			20.44	
1.1.6. TTSC	11.47	11.01	30.44	
	29.20	4.40	12.16	
1.1.7. PENDEZVOUS E DOCKING	20.15	2.44	3.26	
1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. CCCKING (MECHANICAL)	9.05	1.41	3.90	
1.1.0. INTEGRATION, ASSEMBLY. 6 C/D		6.43	17.78	
1.1.9. PREGRAM MANAGEMENT	13.21	4.2+	11.66	
1.1.10. SYSTEMS ENGRG & INTEGRATION	. 24.13	4.50	12.45	
1.1.11. SYSTEMS TEST ARTICLE	60.01			
1.1.17. CYSTEM TIST OPERATIONS	14.25			
1.1.13. G°F	13.70			
1.1.14. FSF				
1.1.15. FACILITIES	1.33			

I-59

OF POOR QUALITY

Table I-2. Nominal Traffic Model Cost Runs, Contd 2.13 16.00 CYST'S LIFE'S UNITS PRODUCED

			13.15.20.	01/11/00
7	ITEM 39 -RERUN- 9	9US FFFE 47JC+	CASE III	
GTUSTAFIONARY PLATFORM PROSRAM COSTS (1)	(1960sh)			
	4015	FIRST	P# CD	k014E
	COST	103	PHASE	PLUS
1.1. G-OFLATFORM (BUS) -TOTAL	321.34			
			10.581	566.35
In It It It at A TRUIT THE A PROTECTION	15.79	3.60	9, 0	
	7.06	3.16	00.00	
1-1-1-3. STAUCTURE (TROLING)	7.11	. 20	6.	
1. 1. 2. THERMAL CONTROL	3.52	7		
		:	***	
	35.04	9.32	13.21	
	33.10	7.55	14.34	
TOTAL TITLINGE CONTROL (AMCD)	1.94	1.11	3.36	
1.1.4. ** ACTION CENTPGL	22.61	4.11	18.50	
1.1.5. "L"CTRICAL POWER	;			
. COLAK ARRAY	91.00	32.35	61.47	
1.1. 4.2. BITT-PIES	16.92	23.17	44.07	
1.1. 5.3. POWTR COND C DIST		2.00	5.44	
	76.61	0.30	11.47	
1.1.6. 1161	12.13	15.74	29.91	
1.1.7. PEND. Junis C Discuss	;			
ي ه	20.23	17.4	9.00	
11.0	29.07	3.46	6.56	
	10.		1.42	
1.1.P. INTERPATION, ASSEMPLY, & C/O		01.5	17.29	
1.1.9. PROGRAM MANAGEMENT	11.22	6.07	11.53	
INTERNATION SYSTEMS ENGRG & INTEGRATION	26.51	6.37	07.70	
1.1.11. SYSTEMS TEST ARTICLE	10.41			
I.I.I. SYSTEM TEST OPERATIONS	21.02	*		
1.1.13. 655	15.16			
1.1.14. Fee				
1.1.15. FACTURES	10.93			

Table 1-2. Nominal Traffic Model Cost Runs, Contd

2.00

16.00

CYCTEM LIFE; UNITS PRUDUCED

STATE OF THE PARTY OF THE PARTY

			13.15.26.	01/11/63
=	LTER OU -RERUN- BUS TIPE 451C* CASE LIL	S TYPE 421C" CAS	1117	
GT TATIONAPY PLATFORM PROGRAM COSTS LI	(1480.8)			
	NO TE F	FIRSI	Px 00	*01.E
	COST	כהצו	COST	501
1.1. GEOPLATFORM (BUS) -TOTAL	327.11	69.69	169.77	516.66
1-1-1- STORY THE	16.47	40.7	40.4	
1.1.1.1. STRUCTURE (PRIMARY)	7.57	900	7.7	
	7:	90.	\$	
1.1.2. THFRMAL CONTROL	3.52	.74	1.4	
1.1.3. ATTITUDE CONTROL	35.34	79.6	10.01	
	33,34	10.9	15.22	
TOTAL CONTROL CONTROL		7.00	16.5	
1.1.4. REACTION CONTPOL	69.27	10.33	14.63	
1.1.5. ELFCTAICAL POWER	36.19	32,30	01.10	
1.1.5.1. COLAR ARRAY	16.92	67.67	44.07	
MATT. ALES	3.	2.66	5.44	
Tolores of the COND & DIST	18.93	6.30	14.97	
1.1.6. 7160	42.19	15.74	27.91	
	26.23	17.51	3.6	
1-1-7-1- PTHO: ZVOUS (AVICATOS)	29.02	3.40	6.50	
The second of th	1000		76.1	
1.1.º. INTEGRATION, ASSEMBLY, 6 C/O		4.33	17.71	
1.1.9. PROGRAM MANAGEMENT	11.34	6.22	11.62	
1-1-10. SYTTEMS ENGRG & INTEGRATION	26.01	6.53	15.51	
1.1.11. SYSTEMS TEST ARTICLS	47.12			
1.1.12. TYSIEM TEST OPERATIONS	21.56			
1.1.13. 65f	15.13			
1.1.14. 648				
1.1.15. FACILITIES	11.67			

Table I-2. Nominal Traffic Model Cost Runs, Contd

			12.25.31.	01/21/00
	11EM 61 BUS TYPE 4	SKC CASE III		
GEDSTATIONARY PLATFORM PROGRAM COSTS	(1980SM)			
	RDT&S	FIRST	PRGD PHASE	ROTEE
	COST	Cust	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	271.61	89.57	247.74	519.35
1.1.1. CTPUCTURE	14.19	3.45	8.44	
1.1.1.1. STRUCTURE (PPIMARY)	6.71	2.63	7.28	
1.1.1 STRUCTUPE (STORNDARY)	6.20	.42	1.16	
1.1.1.3. STRUCTURE (TCOLING)	1.24	-		
1.1.2. THE PAL CONTOGL	3.34	.00	1.67	
1.1.3. ATTITUD: CONTECL	34.34	9.61	27.13	
1.1.3.1. ATTITUD" CONTROL (AVIONICS)	33.34	6.01	22.16	
1.1.3.2. ATTITUE CONTROL (AMCD)	2.00	1.00	4.97	
1.1.4. REACTION CONTROL	25.91	16.62	49.84	
1.1 TOTRICAL POWER	25.72	2:.53	70.61	¥
1.1.5.1. SOLAR ARPAY	14.11	10.43	50.98	
1.1.5.2. PATTERIES	.43	2.15	5. 74	
1.1.5.3. "OWER COMU & DIST	15.35	4.95	13.70	
1-1-5- 1150	11.75	12.67	35.04	
1.1.7. PENDEZVOUS & DECKING				
1.1.7.1. RENOSIVUUS (AVIONICS)				
1.1.7.2. DOCKING (PECHANICAL)		-		
1.1.3. INTEGRATION, ASSEMBLY, & C/O		0.11	23.15	
1.1.9. PROGRAM PANAGEMENT	2.71	5.58	15.44	
1.1.10. SYSTEM, ENGRG & INTEGRATION	41.96	>.40	16.21	
1.1.11. SWETCHS TEST APTICLE	7*.13			
1.1.17. SYSTEM TEST GERRATIONS	17.34			
1.1.13. 65-	15.65			
1.1.14. Fer				
1.1.15. FACILITIES	.1.57			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00

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			12.25.31.	01/21/80
	ITEM 62 0 YPE 4	6MC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(148C1M)			
	ROTSE	FIRST	PRUD	ROTEE
	COST	T100	PHASE COST	PLUS
1.1. GEOPLATFORM (BUS) -TOTAL				PKUD
and the second s	313.42	111.72	212.27	526.09
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY)	15.79	3.66	6.96	
1.1.1.2. STRUCTURE (SECONDARY)	7.26	3.10	6.01	
1.1.1.3. STRUCTURE (TOOLING)	7.11 1.62	.50	. 95	
1.1.2. THERMAL CONTROL	3.52	.7e	1.49	
1.1.3. ATTITUSE CONTOOL	36.53			
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34 • 3d	12.23	23.25	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.25	1.72	3.65	
1 1 4 05457100 501700			****	*
1.1.4. REACTION CONTROL	27.32	22.60	43.47	
1.1.5. FLECTRICAL POWER .	35.91	31.71	40.25	
1.1.5.1. SOLAR ARRAY	14.53	62.67	60.25 43.08	
1.1.5.2. PATTERIES	.43	2.77	5.27	
1.1.5.7. POWER COND & DIST	18.94	6.27	11.91	
1.1.6. TTEC	12.19			
	12.14	15.74	29.71	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIONICS)				
1.1.7.2. POCKING (PECHANICAL)				
1.1.9. INTEGRATION, ASSCHALLY, & C/O		10.44	19.64	
		2011	17064	
1.1.9. PROGRAM MANAGEMENT	9.71	6.96	13.23	
1.1.10. TYSTEMS ENCRG & INTEGRATION	22.24			
	22.76	7.31	13.89	
1.1.11. TYSTEMS TEST ARTICLE	97.45			
1 1 12 CYCTCH TOCT OF CONTROLS				
1.1.12. SYCIEM TEST OF SPATIONS	24.12			
1.1.13. GSS	.3.13			
1 1 1/2				
1.1.14. FCC				
1.1.1". FACILITIES	15.17			,

1.1.15. FACILITIES

Table I-2. Nominal Traffic Model Cost Runs, Contd

STATEM CIPET ONLY PRODUCED	*****			
			11.41.30.	01/21/80
	ITEM 63 BUS TYPE 4	718 CASE ITT		
CCCCTATT 3NADY OF ATC COM				
GFOSTATIONARY PLATFORM PROGRAM COST	2 (16803W)			
	ROTEE	FIKST	PROD	RDTEE
	PHASE COST	UNIT	PHASE	PLUS
	6931	COST	COST	FROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.82	72.60	252.10	482.91
1.1.1. STRUCTURE	15.78	3.66	13.22	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	11.41	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	7.10	.50	1.81	
Telester Structure (150EING)	1.62			
1.1.7. THE MAL CONTROL	3.31	.66	2.38	
1.1.3. ATTITUDE CONTROL	25.60	0.07	21.92	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)		4.54	16.30	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.42	1.53	5.53	
1.1.4. REACTION CONTROL	17.39	7.45	26.89	
1.1.5. ELECTRICAL POWER	29.05	27.62	100.44	
1.1.5.1. SOLAR ARRAY	12.76	19.06	70.97	
1.1.5.2. BATTERIES	. 35	2.52	9.10	
1.1.5.3. POWER COND & DIST	14.95	5.04	20.37	
1.1.4. TTEC	9.33	11.06	39.92	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIDNICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.61	24.57	
1.1.9. PROGRAM MANAGEMENT	7.44	4.54	16.38	*
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.98	4.54	16.3c	
1.1.11. SYSTEMS TEST ARTICLE	63.53			
1.1.12. SYSTEM TEST OPERATIONS	14.29			
1.1.13. GSE	10.05			
1.1.14. FSF				

4.06

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

10.00 2.13

			12 25.31.	61/21/60
	LTEN 64 BUS TIPF 47JE	CASE III		
GEGSTATIONARY PLATFORM PROGRAM COST	5 (196CSM)			
	KD TEE	FIRST	PROD	ROTEE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PRCD
1.1. GEOPLATEORM (BUS) -TOTAL	302.55	64.70	161.47	464.02
1.1.1. STRUCTURE	15, 31	3.67	0.97	
1.1.1.1. STRUCTURE (PRIMARY)	7.07	3.17	6.02	
1.1.1.2. STRUCTURE (SECONDARY)	7.1?	.50	•96	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERPAL CONTROL	3.40	.71	1.35	
1.1.3. ATTITUDE CONTROL	33.64	7.21	13.71	
1.1.3.1. ATTITUD. CONTROL (AVIONICS)	31.98	5.53	16.51	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.77	1.00	3.19	
1.1.4. PEACTION CONTROL	1° • 22	3.70	7.03	
1.1.5. ELECTRICAL POWER	24.12	32.33	61.42	
1.1.5.1. SOLAR APPAY	16.37	23.19	44.07	
1.1.5.2. 9ATTERIES	. 4 4	2.00	5.44	
1.1.5.3. POWER CUND & DIST	13.46	6.27	11.92	
1.1.5. TTEC	11.71	13.75	26.13	
1.1.7. PENDEZVOUS & DOCKING	30.00	4.01	9.14	
1.1.7.1. RENDETVOUS (AVICNICS)	20.45	3.30	6.27	
1.1.7.2. POCKING (MECHANICAL)	9.73	1.51	2.87	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		7.44	15.06	
1.1.9. PPCGRAM MANAGEMENT	11.03	2.24	10.06	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.03	5.50	10.56	
1.1.11. SYSTEMS TEST ARTICLE	74.13			
1.1.12. SYSTEM TEST OPERATIONS	14.35			
1.1.13. 685	44.11			
1.1.14. FSE				
1.1.15. FACILITIES	0.25			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED	9.50				
			11.41.30.	01/21/6	9
	LIEM OS BUS TIPE 4719 CASE	719 CASE 111			
GEOSTATIONARY PLATFORM PROGRAM COSTS	(196658)				
	NO TEF	FIRST	PROD		
	PAASE	UNIT	PHASE	PLUS	
	1507	Cust	1500	00	
1.1. GEOPLATFORM (8US) -TOTAL	226.16	74.67	270.30	440.46	
1-1-1- 578007036	16.61	4.56	16.45		
STRUCTURE	7.57	4.35	14.04	•	4
STRUCTURE (SE	2.23	05.	1.01		
1.1.2. THFRPAL CONTRGL	3.31	09.	2.36		
1.1.1. ATTITUDE CONTROL	26.96	24.0	23.17		
	25,39	4.06	17.53		
1.1.3.2. 4TTTTJOF CONTROL (4"CD)	1.47	1.50	5.64		
1.1.4. PEACTION CONTROL	17.66	1.50	28.79		
The Francisco Physics	40.17	27.03	100.45		
SOLAP AARAY	17.75	19.06	76.97		
2 A 11:31.5	4:0	2.52	9.10		
1.1.5.1. POWER COND E DIST	14.94	59.6	20.36		
1.1.6. 7750	9.33	11.06	39.42		
1.1.7. PENDEZVOUS & DCCRING 1.1.7.1. P(BD-Z VOUS (AVIONICS) 1.1.7.2. DOCKING (PECHANICAL)					
1.1.4. INTEGPATION, ASSEMBLY, E C/O		7.02	25.34		
1.1.9. POTSPAN MANASEMENT	7.56	4.68	16.89		
1.1.13. SYSTEMS ENGRG & INTEGRATION	15.24	4.00	16.89		
1.1.11. TYSILMS TEST ARTICLE	65.51				
1.1.12. SYSTEM TEST OFFRETIONS	14.74				
1.1.13. 65F	10.21				
1.114. FSE					
1.1.15. FACILITIES	9.76				

16.00 2.00

			12.25.31.	61/21/60
	ITLM OO EUS TYPE 4	7LS CASE III		•
GEOSTATIONARY PLATFORM PROGRAM COSTS	(198CSM)			
	,KDTSE	FIRST	PROD	RDTEÉ
	FH 45	UNIT	PHASE	PLUS
	cast	COST	COST	PRCD
1.1. GEOPLATEORM (BUS) -TOTAL	307.41	66.00	165.07	472.46
1.1.1. STOUCTURE	16.93	4.56	6.67	
1.1.1.1. STEUCTURE (PRIMARY)	7.58	4.00	7.72	
1.1.1.2. STPUCTURE (SECONDARY)	7.12	.50	.96	
1.1.1.3. STRUCTURE (TOOLING)	2.24			
1.1.2. THE MAL CONTROL	3.40	.71	1.35	
1.1.3. ATTITUDE CONTROL	33.72	7.57	14.39	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.13	5.06	11.14	
1.1.3.2. ATTITUDE CONTRUL (AMCD)	1.02	1.71	3.25	
1.1.4. PEACTION CONTROL	14.46	3.42	7.45	
1.1.5. ELFCTRICAL POWER	36.12	32.33	61.42	
1.1.5.1. COLAR ARRAY	16.82	23.19	44.07	
1.1.5.2. BATTERIES .	. 4 4	2.06	5.44	
1.1.5.3. POWER COND & DIST	19.60	0.27	11.52	
1.1.6. TTEC	11.91	13.75	26.13	
1.1.7. PENDEZVOUS & DECKING	30.00	4.81		
1.1.7.1. RENDEZVOUS (AVIONICS)	20.46	3.30	7.14 6.27	
1.1.7.2. DOCKING (MECHANICAL)	9.53	1.51	2.67	
	***	****	2.67	
1.1.6. INTEGRATION, ASSEMBLY, & C/O		5.12	15.43	
1.1.9. PROGRAM MANAGEMENT	11.15	5.41	10.78	
1.1.10. SYSTEMS INCRE & INTESPATION	25.30	5.60	10.00	
1.1.11. SYSTEMS TEST ARTICLE	75.73			
1.1.12. SYSTEM TEST OPERATIONS	10.75			
1.1.13. GSF	15.07			
1.1.14. FSF				
1.1.15. FACILITIES	9.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd SYSTEM LIFE; UNITS PACOUCED

			12.25.31.	01/21/80
1150	ITEM 67 BUS TYPE 49KC+ CASE III	CASe 111		
GEOSTATIONARY PLATFURM PPOGRAM COSTS (1960SM)	0883			
	7076 6007	FIRST UNIT CGST	PROD FAASE COST	ROTEE PLUS PROD
1.1. GEOPLATEDRH (BUS) -TOTAL	322.60	97.43	166.04	506.66
1-1-1- STOUCTURE (PRIMARY) 1-1-1-2- STRUCTURE (SECONDARY) 1-1-1-3- STRUCTURE (TUBLING)	15.79 7.25 7.11 1.62	3.66 3.16 .50	905 707 49	
1.1.2. THEPMAL CONTROL	3.52	.78	3:1	
1.1.3. ATTITUDE CONTRCL 1.1.3.1. ATTITUGE CONTRCL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMOD)	35.16 33.20 1.96	9.52 7.74 1.76	16.06 14.70 3.38	
1.1.4. PSACTION CONTROL	67.73	10.00	18.49	*
1.1.5. ELETINICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. SATTERIS 1.1.5.3. POWER COND & OIST	36.19 16.82 .44 19.93	32.36 23.19 2.66 6.30	61.46 44.07 5.44 11.97	
1.1.6. 1750	12.19	15.74	29.91	
1.1.7. PROBEZVOUS & DOCKING 1.1.7.1. PROSEZVOUS (AVITALCS) 1.1.7.2. POCKING (MECHANICAL)	25.23 27.52 5.61	3.46	8.00 6.58 1.42	
1.1.4. INTEGRATION, ASSEMPLY, 6 C/O		4.15	17.39	
1.1.9. POJGRAM MANAGEMENT	11.23	6.13	11.55	
1.1.1.13. SYSTEMS FAGRG & INTEGRATION	26.45	10	12.17	
1.1.11. SYTEMS FEST APTICLE	25.42			
1.1.12. CYST: 4 F'ST DO:AATTOWS	21.14			
1.1.13. 68	15.18			
1.1.14. FTF				
1.1.15. FACILITY:	11.20			

Table I-2. Nominal Traffic Model Cost Runs, .Contd SYSTEM LIFE; UNITS PRODUCED 16.00 2.00

			12.25.31.	01/21/
	ITER OB EUS TYPE 43MC" CASE III	3MC CASE 111		
GEOSTATIONAPY PLATFORM PROSRAM COSTS (1960SM)	19008#3			
	RDTEE PHASE CUST	FIRST	PROD PHASE COST	RDTGE PLUS
1-1- GEOPLATFURM CRUS) -TOTAL	327.50	67.43	166.06	208.66
1.1.1. STPUCTURE	15.79	3.00	95	
STRUCTURE	7.11		54.	
1.1.2. THERMAL CONTROL	3.52	.74	1.44	
	35.16	4.52	14.08	
1-1-3-1- ATTITUDE CONTROL (AVIDALCS) 1-1-3-2- ATTITUDE CONTROL (AMCO)	33.23	7.74	3.36	
1.1.4. REACTION CONTROL	22.73	10.00	18.99	
1.1.5. SLECTPICAL POWER	14.13	12.14	• • • • • • • • • • • • • • • • • • • •	
SOLAK ARMAT	15.32	23.14	44.07	
1.1.5.3. POSER COND & DIST	44.	2.00	***	
		. ;		
101.00.1.00	12.19	12.74	25.91	
1-1-7- REMDEZVOUS & DCCHING 1-1-7-1- PERSERVIUS FAVIONICS 1-1-7-2- DOCKING MECHANICAL	25.23	3.40	0.00	
10.10 TATE OPALITON ASSET			2007	
113.	11.23		11.59	
1.1.13. SYSTEMS CHERGE & INTEGRATION	26.55	14.0	12.17	
I.I.II. TYSTEMS TEST ARTICLE	27.50			
1.1.12. SYCIEM TEST OFFDATIONS	21.15			
1.1.12. 645	41.44			
1.11.14. 65				
1.1.15. FACILITIES	11.74			

. A ? 1 F W	r i e e i	21 IVU	Table 1-2.	Nominal	Traffic	Model	Cost	Runs,	Contd	
							*			
									1	•

	ITER AD DUE SUS		11.41.30	• 01/21/
GEOSTATIONARY PLATFORM PROGRAM COST	ITEM 69 BUS TYPE	III BEAL BAFF		
THOUSEAN COST	S (14808M)			
	KOTEE	FIRST	****	
	PIASE	UNII	PROD	KUTEE
	1201	COST	PHASE	PLUS
1.1. GEOPLATFURM (BUS) -TOTAL		(0)1	COST	PHCD
10146	220.82	72.60		
1.1.1. STRUCTURE			262.10	462.91
1.1.1.1. STPUCTURE (PRIMARY)	15.78	3.06		
to to loca libilitiin lees some	7.06	3.16	13.22	
1.1.1.3. STRUCTURE (TOOLING)	7.10	•50	11.41	
	1.02	• > 0	1.61	
1.1.2. THEPHAL CONTROL				
	3.31	•66		
1.1.2. ATTITUDE CONTROL		•00	2.36	
ieladala ATTITUDE CONTEST	26.60	6.07		
1.1.3.2. ATTITUDE CONTROL (AVIONICS)	2" • 1 1	4.54	21.92	
	1.42	1.53	16.30	
1.1.4. PRACTICH CONTROL			5.53	
	17.39	7.45		
1. 1.5. FLECTOTCAL POWER		7.45	26.69	
10 10 01a SOLAR ACDAY	23.05	27.02		
1.1.5.2. SATTEDICE	12.76	19.56	100.44	
1.1 3. POWER CONO & DIST	• 35		70.47	
	14.95	2.52	9.10	
1.1.6. TTEC		5.64	20.37	
	9.33			
1.1.7. PENDEZVOUS & DOCKING		11.00	39.92	
1.1.7.1. PENDEZ VOUS (AVIONICS)			_	
1.1.7.2. DOCKING (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
-1.F. THIRCOLLE				
.1.E. INTEGRATION, ASSEMBLY, & C/O				
		61	24.57	
. 1. 9. PERGRAM MANAGEMENT	•		24021	
1 10	7.44	4.54	16.38	
.1.10. CYCTEMS ENGRG & INTEGRATION			10.36	
	15.98	4.24	16.30	
. 1.11. SYCTEMS TEST ARTICLE			10.36	
	£3.*3			
. 1.12. SYSTEM TEST OPERATIONS				
	14.29			
.1.17. 654				
	17.05			
1.14. = 5=				
1.14. FACILITIES				
	9.25			

## Table I-2. Nominal Traffic Mode! Cost Runs, Contd

SYSTEM LIFE! UNLIS PRODUCED

15.06 2.00

			12.75.31.	01/21/60
	ITEM 70 603 TYPE 43	KE CASE III		
GOSTATIONARY PLATFORM PROSRAM COSTS	(198035)			
	POTES	FIKST	PAUD	ROTLE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	302.55	24.98	161.47	464.02
1.1.1. \$72110 TURE	15.81	3.67	0.47	
1.1.1.1 . THUCTURE (PPIMARY)	7.07	3.27	6.02	
1.1.1.7. STENCTURE (SECONDARY)	7.12	.50	• 96	
1.1.1.3. STRUCTURE (TEDLING)	1.52			
1.1.2. THE SPAL CONTROL	3.40	.71	1.35	
	33.64	7.21	13.71	
1.1.3. ATTITUDE CONTROL (AVIONICS)	31 - 30	5.23	10.51	
1.1.3.7. ATTITUDE CONTROL (APCD)	1.77	1.00	3.19	
1.1.4. STACTION CONTROL	14.22	3.70	7.33	w
1.1.5. GLECTRICAL POWER	36.12	32.33	61.42	
1.1.5.1. SOLAR ARRAY	16.02	23.19	44.07	
1.1.5.2. PATTERIES	.44	2.06	5.44	
1.1.5.3. POWER COND & DIST	18.36	6.27	11.92	
1.1.4. TTEC	11.91	13.75	26.13	
BENDERVOUS & DOCKING	30.22	4.01	9.14	
1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. PENDEZVOUS (AVIONICS)	20.46	3.30	6.27	
1.1.7.2. DOCKING (MECHANICAL)	9.53	1.51	2.67	
1.1.A. INTEGRATION, ASSEMBLY, & C/O		7.94	15.09	
1.1.9. PROGRAM MANAGEMENT	11.03	5.29	10.06	
1.1.10. SYSTEMS ENCYG & INTEGRATION	26.05	5.56	10.56	
1.1.11. SYSTEMS TEST ARTICLE	74.13			
1.1.12. CYCIEM TEST CHERATIONS	18.35			
1.1.12. 65"	14.31			
1.1.14. FSE				
1.1.15. FSCILITIES	9.95		×	

Table I-2. Nominal Traffic Model Cost Runs, Contd

			11.41.30.	01/21/80
	ITEM 71 BUS TYPE S	SOMS CASE IV		
STOSTATIONARY PLATFORM PROGRAM COSTS	(1900 SM)			
	KOTEE	FIRST	PROD	ROTLE
	LOST PHASE	TIAU	PHASE	PLUS .
	6621	CUST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	309.65	116.45	225.95	535.59
1.1.1. STRUCTUPE	19.77	5.28	10.04	
1.1.1.1. STRUCTURE (PRIMARY)	7.82	4.56	a.66	
1.1.1.7. STRUCTURE (SECONDARY)	9.35	.72	1.37	
1.1.1.3. STRUCTUPE (TC3LING)	2.60			
1.1.2. THEPHAL CONTROL .	3.71	.50	1.72	
1.1.3. ATTITUDE CONTRCL	24.17	6.79	17.07	
1.1.2.1. ATTITUDE CONTROL (AVIONICS)	26.75	7.45	14.10	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.47	1.53	2.91	
1.1.4. PEACTICA CONTROL	19.35	12.02	22.63	
1.1 FLECTRICAL POWER .	44.10	- 40.04	\$1.27	
1.1.5.1. SOLAP ARRAY	19.08	33.27	63.22	
1.1.5.2. BATTERIES .	.36	4.72	0.96	
1.1.5.3. POWER COND & DIST	24.66	10.65	19.09	
1.1.5. TTEC	10.11	17.6ô	33.59	
1.1.7. PENDEZYOUS & DOCKING				
1.1.7.1. PENDEZVOUS (AVIGNICS)				
1.1.7.2. COCKING (MECHANICAL)				
1.1.9. INTEGRATION, ASSEMBLY, E C/O		11.15	21.18	
1.1.9. PROGRAM MANAGEMENT	9.27	7.43	14.12	
1.1.1). SYSTEMS ENGRG & INTEGRATION	19.91	7.43	14.12	
1.1.11. SYSTEMS TEST ARTICLE	104.05			
1.1.12. SYSTEM TEST OPERATIONS	23.41			
1.1.13. 655	17.52			
1.1.14. =50				
1.1. ". FACILITIES	15.23			

			12.25.31.	01/
	ITEM 72 BUS TYPE S	OME CASE IV		
SFOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)			
	*****			
	ROTSE	FIRST	PRGD	ROTEE
	PHASE	UNIT	PHASE	PLUS
	C321	CUST	CUST	PK CD
1.1. GEOPLATFORM (BUS) -TOTAL	435.91	136.70	136.70	543.60
1.1.1. STRUCTURE	10.73	>.25	5.25	
1.1.1. STRUCTURE (PRIMARY)	7.05	4.64	4.64	
1.1.1.2. "TRUCTURE (SECONDARY)	3.20	.01	.01	
1.1.1.3. STRUCTURE (TOTLING)	2.56			
1.1.2. THE PHAL CONTROL	3.41	. vd	.98	
1.1.3. ATTITUDE COMTROL	45.23	10.27	10.67	
1.1.1.1. ATTITUDE CONTROL (AVIONICS)	33.20	0.46	8.96	
1.1.3.2. ATTITUDE CONTROL (AMON)	2.23	1.91	1.91	
1.1.4. REACTION CONTONL	20.20	2.89	5.00	
1.1.5. FLECTRICAL POURP	54.43	::.30	55.36	
1.1 1. COLAR APRAY	22.11	30.96	33.74	
1.1.5.2. 941763155	• • • •	2.25	5.28	
1.1.5.3. POWER COND & DIST	11.00	11.13	11.13	
1.1.6. TTEC	12.70	25.01	22.01	
1.1.7. 25MDEZVOUS & DOCKING	32.19	6.07	6.07	
1.1.7.1. PENDEZVOUS (AVIONICS)	21.25	4.20	4.20	
1.1.7 COCKING (MECHANICAL)	10.73	1.61	1.61	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		12.70	12.70	
1.1.9. PROGRAM MANAGEMENT	13.35	0.52	0.52	
	*****	0.72	0.72	
1.1.10. SYSTEMS ENGRG & INTEGRATION	31.54	c. > 4	0.94	
1.1.11. SYSTEMS TEST ARTICLE	119.24			
1.1.12. SYSTEM TEST OPERATIONS	27.51			
1.1.13. GSF	11.03			
1.1.14. #5#				
1.1.15. FACILITIES	14.00			

Table I-3. High Traffic Model Cost Runs

			12.25.31.	01/21
	1TEM 73 BUS TYPE 608.	38C* CASE 11		
GEOSTATIONARY PLATFORM PROGRAM COSTS (1980SM)	1196088)			
	NOTCE	FIRST	98.00	70167
	PHASE	LIND	PHASE	5102
	100	Cust	C 0 S 1	PR 00
I.I. GEOPLATFORM (BUS) -TOTAL	1.8.20	34.67	1044-11	134.3 31
	6.8			16.3631
	5.54	1.33	40.55	
	3.72		35.00	
10101030 STRUCTURE (TOOLING)	. 53	:	20.00	
1.1.2. THFRMAL CONTRGL	2.93	7.	15.1	
0	2			
	29.54	3.	112.66	
INTERPRETATION CONTROL (ANCO)	1.17	1.34	35.00	
1.1.4. REACTION CONTROL	19.05	3.56		
1.1.5. GIECTOT'AL BOLLE			43.06	
10105010 SOLAR ARRAY	13.04	11.77	300.14	
I. 1. 5. 7. BATTERIES	· ·	17:0	220.03	
1.1.5.3. PAWER COND & DIST	2,5	•	23.42	
1.1.4. 1100	•	01.9	26.70	
	10.44	6.35	166.29	
•	24.20	,		
I-I-7-1 RENDEZVOUS CAVIONICS	19.57	3.00	•0•29	
DUCKING CHECHANICAL)	4.72	\$4.	15.50	
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		3.73	3	
1.1.9. PROGRAM MANAGEMENT	6.29	*		
1.1.10. SYSTEMS ENGRG E INTEGRATION		:	65.65	
	14.60	2.61	66.31	
1.1.11. SYSTEMS LEST ARTICLE	34.77			
1.1.12. SYSTEM TEST OPERATIONS	19.6			
1.1.13. 65F	11.21			
1.1.14. FSF				
1.1.13. FACILIFIES	3.63			

Table I-3. High Traffic Model Cost Runs, Contd

STATEM ETT - | UNE 12 PAUDUCED

40.00 33.77

			12.25.31.	01/21/00
11	TEN 74 WJS TYPE 61	DC CASÉ II		
GENSTATIONARY PLATFORM PROGRAM COSTS (	1960\$M1			
GENSIAII GHANT TEATH		FIRST	PROD	KOTEE
	ROTE:	UNIT	PHASE	PLUS
	COST	CUST	COST	PR GD
	•		1099.97	1276.74
1.1. GEOPLATFORM (MUS) -TOTAL	176.76	43.10	1044.44	
1.1. Graftatrakii tisasi		1.50	40.34	
1.1.1. STRUCTUPE	9.93	1.37	34.02	
1 1 1 1 1 STRUCTURE (PRIMARY)	5.59		5.52	
1.1.1.2. STRUCTURE (SECONDARY)	3.79	• • • •		
1.1.1.3. STRUCTURE (TOOL ING)	.55			
1. 1. 1. 1.		.47	12.10	
1.1.2. THERMAL CONTROL	2.94	• • • •		
1.1.62. Inc. inc.		5.20	132.50	
1.1.3. ATTI TUDE COMTROL	31.75	3.75	92.57	
ATTITUDE CONTROL (AVIONICS)	30.41	1.45	36.93	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.42		
1.11.1121		0.23	209.75	
1.1.4. REACTION CONTPOL	21.77	••••		
		11.71	2+8.40	
1.1.5. ELECTRICAL POWER	15.60	6.71	221.01	
1.1.5.1. SOLAR ARRAY	7.95		22.70	
1.1.5.2. RATTERIFS	.40	2.11	53.81	
1.1.5.3. POWER COND & DIST	7.33			
1117777	10.44	6.42	163.59	
1.1.6. 1160	10.46	•••		
1.1.7. PENDEZVOUS & DOCKING				
1 1 7 1 RENDEZVOUS CAVIONICS!				
1.1.7.2. DOCKING (MECHANICAL)				
		4.04	102.00	
1.1.8. INTEGRATION, ASSEMBLY, & C/O				
	6.85	2.69	68.53	
1.1.9. PPIGRAM MANAGEMENT	0.07			
	16.10	2.62	71.96	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.14			
	37.66			
1.1.11. SYSTEMS TEST ARTICLE	37.00			
	9.32			
1.1.12. SYSTEM TEST OFERATIONS	4.16			
	9.25			
1. 1. 13. GSE	****			
1.1.14. FSF				
	4.97			
1.1.15. FACILITIES	•••			

Table I-3. High Traffic Model Cost Runs, Contd STATEM LITTE UNLES PRUBULED

,			12.25.31.	01/21/80
	ITEM 75 BUS TYPE OZCCO CASE 11	CC. CASE 11		
GEOSTATIOMARY PLATFORM PROGRAM COSTS (1980SM)	1980583			
	#0 FCE	FIRST	9	
	PHASE	1185	PHASE	3014
lala GEORIATEDOM contra	1500	1500	COST	4800
-TOTAL	206.03	43.40	12.31	
lelele Trancture				1093.55
1.1.1.1. STRUCTURE (PRIMARY)	10.52	1.11	36-14	
1 SEC	2.11	1.53	31-10	
	21.4	٠٤٠	**	
1.1.2. THERMAL CONTROL				
L. L. ATTENDED CO.	44.5	• > 0	10.13	
CONTROL	31.16	4.60	**	
1.1.3.2. ATTITUDE CONTACT (AMCD)	29.91	3.28	200	
	1.25	1.39	20.36	
TOTOLO MERCITON CONTROL	10.50	10.4		
1.1.5. ELFCTRICAL BOUSE		•	66.23	
1.1.5.1. SOLAR ARRAY	16.92	12.69	11 016	
1.1.5.2. BATTERIES	00.7	4.32	140.30	
I.1.5.3. POWER COND & DIST	2.	35.	20.10	
		\$.3 <b>.</b>	43.67	
	19.01	7.00		
1.1.7. RENDLZWOUS & DOCKING	;		70.5.	
1-1-7-1. RENDEZVOUS LAVIONICS	54.43	3.15	64-32	
I. I. 7. 2. DOCKING (MECHANICAL)	62.4	2.31	21.97	
1.1.A. INTEGRATION, ASSENSIVE & CAS		•	12.34	
		4.06	62.07	
TICKER BANBGERENT	6.53	2.70	14.24	
I.I.IO. SYSTEMS ENGRG & INTEGRATION	20.15			
1.1.11. STETEMS FEST ABTICLE			10.40	
	37.66			
1.1.12. SYSTEM TEST OPERATIONS	9.37			
1.1.13. 65E				
1.1.14. FTF	76.11			
I.I.IS. FACILITIES	•1.			

Table I-3. High Traffic Model Cost Runs, Contd

			12.25.31.	01/21/00
17	ITEN 76 BUS TYPE 763DC. CASE II	Sade CASE II		
GEOSTAFIONARY PLATFORM PROGRAM COSTS (1960SM)	9808N)			
	ROTGE PHASE COST	F1kST UNIT COST	PROD PHASE COST	ADTAE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.53	49.36	793.87	1011.40
1.1.1. STRUCTURE 1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	5005 5005 6406 670	1.06	31.75 27.40 4.35	
1.1.2. THEPMAL CONTROL	3.04	.52	6.32	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (ANCD)	31.65	3.01	91.84 58.80 23.04	
1.1.4. RFACTION CONTROL	19.12	64.4	73.70	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	19.72 9.59 9.59 141	15.29	245.06 178.15 20.06 46.85	
1.1.6. TTGC	10.79	1.11	123.47	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PENDSZVJUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)	24.61 19.74 4.87	3.52	\$1.91 \$1.91 \$6.0	
1.1.8. INTEGRATION, ASSEMBLY, C C/O		19.4	73.91	
1.1.9. PPDGRAM MANAGEMENT	6.89	3.04	49.28	
1.1.10. SYSIEMS ENGRG & INTEGRATION	21.01	3.23	51.74	
1.1.11. SYSTEMS TEST ARTICLE	43.05			
1.1.12. SYSTEM TEST OPERATIONS	10.66			
1,1,13, 65	12.01			
1,1,14, FSE				
1.1.15. FACILITIES	10.4			

Table I-3. High Traffic Model Cost Runs, Contd

			12.25.31.	01/21/
•	ITEM 77 WUS TYPE 640C" CASE III	40C* CASE 111		
GEOSTATIONARY PLATFOPM PROGRAM COSTS (19460SM)	1960581			
	KD FEE PHASE COST	F1RST COST	PRUD	2016 PLUS P200
1.1. GEOPLATFORM (BUS) -TOTAL	154.47	64.73	745.65	10001
1.1.1. STPUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.1.3. STPUCTURE (TOOLING)	22.55 26.0 75.0 79.	2.12	3.40	
1.1.2. THERMAL CONTROL	3.15	šć.	****	
1.1.3.1. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	32.68 31.18 1.51	 1.61 1.54	70.82 53.07 17.75	
1.1.4. REACTION CONTROL	20.22	5.92	66.14	
1.2.5. FLECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. GATTERIES 1.1.5.3. POWER COND & DIST	26.99 12.81 .42 13.75	16.25	258.93 187.11 21.63 50.20	
1.1.6. 1760	11.17	4.42	108.47	
1.1.7. RENDEZVOUS E DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)	24.45 19.93 5.02	3.42	39.43 32.04 7.39	
1.1.8. INTEGRATION, ASSERBLY, & C/O		6.05	69.69	
1. 1.9. PROGRAM MANAGERSMT	61.6	4.03	*****	
1.1.10. SYSTEMS ENGRG & INTEGRATION	53.04	42.4	.1.00	
1.1.11. SYSTEMS TEST ARTICLE	56.48			
1.1.12. SYSTEM TEST OPERATIONS	13.90			
1.1.13. GSF	13.17			
1.1.14. FSE				
1.1.15. FACILITIES	6.34			

Table I-3. High Traffic Model Cost Runs, Contd

			12.25.31.	01/21/0
	ITEM 70 MUS TYPE 65LC CASE 111	SLC CASE 111		
GEOSTATIONARY PLATFORM PROGRAM COSTS (1980SM)	9805#1			
	PD T & E PH A S E COST	F 1 KST UNIT	PHASE	RUTGE PLUS
1.1. GEOPLATFORM (BUS) -TOTAL	269.67	17.67	675-35	1145.02
			į.	
•	14.48	3.66	36.74	
STRICTIBE	7.16	3,31	33.09	
1-1-1-3 STRUCTURE (TDOLING)	1.72		3.64	
I.I.C. IMERMAL CUNTRUL	3,22	19.	60.9	
=	35.06	9.35	63.38	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.12	7.58	75.69	
CONTROL	1.94	1.77	17.69	
1.1.4. REACTION CONTROL	25.60	17.07	170.45	
1.1.5. FLECTRICAL POWER	31.28	27.06	276.23	
I I E 2 BATTER E	14.74	14.51	194.76	
1.1.5.3. POWER COND & DIST		2.33	23.22	
		:	63.36	
1.1.6. TTKC	11.30	16.50	104.06	
1.1.7. PFWDEZVOUS & DOCKING				
1.1.7.1. RFNDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
TOTOGO THE PERMITTING ASSEMBLY, & C/O		61.0	11.01	
1.1.9. PPOGRAM MANAGEMENT	96.0	95.6	54.54	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.17	2.74	57.27	
1.1.11. SYSTEMS TEST ARTICLE	76.47			
1.1.12. SYSTEM TEST OPERATIONS	16.93			
1.1.13. 65"	12.10			
1,1,14, 555				
1.1.15. FACILITIES	11.03			

Table I-3. High Traffic Model Cost Runs, Contd

			12.25.31.	6	01/21/
-	ITEN 79 BUS TYPE 66LC" C/SL III	111 25.2 211			
GEOSTATIONARY PLATFORM PROGRAM COSTS (LVBOSM)	(#8084)				
	NO TEE PHASE	FIRST	PHASE	PLUS	
1.1. GENPLATFORM (BUS) -TOTAL	331.48	101.62		947.41	
1.1.1. STRUCTURE	15.89	4.16	25.33		
1.1.1.1. STRUCTURE (PRIMARY)	7.40	3.7.	22.64		
STRUCTURE (	2.01	•			
1.1.2. THERMAL CONTROL	3.40	.71	4.29		
1.1.3. ATTITUDE CONTROL	34.83	••••	54.49		
1. ATTITUDE CONTROL	32.93	1.24	43.00		
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.90	1.75	10.61		
1.1.4. REACTION CONTROL	15.52	6.39	56.92		
1.1.5. FIFCIRICAL POWER	41.80	36.39	232.66		
SOLAR APR	19.05	27.20	165.36		
1.1.5.2. BATTERIES . 1.1.5.3. POWER COND & DIST	22.31	7.62	21.14		
11.4- 116	•	3	10.01		
		13.30	97.78		
	25.77	3.91	23.72		
1.1.7.2. DOCKING (MECHANICAL)	66.36	17:	4.20		
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		9.50	97.36		
1.1.9. PROGRAN MANASEMENT	11.54	6.33	34.36		
1. 1. 10. TYSTEMS ENGRG & INTEGRATION	62.73	6.63	40.29		
1.1.11. SYSTEMS TEST ARTICLE	49.64				
1.1.12. SYSTEM TEST OPERATIONS	21.94				
1.1.13. GSE	15.60				
1.1.14. FSF					
1.1.15. FACILITIES	10.50	明しません ここ			

Table I-3. High Traffic Model Cost Runs, Contd

3131:0 LIF	. UNLID PAUDULIU	 4000

•			12.25.31.	01/21/60
1	TEM OO BYS TYPE 67MC	CASE 111		
GEOSTATIONARY PLATFORY PROGRAM COSIS (	198014)			
	MASF COST	FIRST Unit Cost	PROU PHASE COST	RDT &E PLUS PROD
1.1. GENPLATFORM (BUS) -TOTAL	340.21	128.78	676.71	1024.92
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	7.03 7.00 1.59	3.5v 3.10 .49	16.66 16.29 2.59	
1.1.2. THERMAL CONTROL	3.50	.77	4.05	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	36.85 34.56 2.29	12.69 10.75 1.94	66.70 56.50 10.20	
1.1.4. REACTION CONTROL	27.56	23.00	125.05	
1.1.5. ELFCTRICAL POWER 1.1.5.1. SOLAR AWRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	46.85 21.14 .45 25.26	\$4.08 31.27 4.02 6.79	231.61 164.30 21.15 46.17	
1.1.6. TTEC	12.14	15.36	80.73	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.0. INTEGRATION, ASSEMBLY, & C/O	*	12.64	63.24	
1.1.9. PRIGRAM MANAGEMENT	10.55	0.62	42.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.92	6.42	44.27	
1.1.11. SYSTEMS TEST ARTICLE	112.33			
1.1.12. SYSTEM TEST OPERATIONS	27.60	- 11-1		. Thomas
1.1.13. GSE	14.25	5.5 - Sici		
1-1-14. FSF				
1.1.15. FACILITIES	15.85			

Table I-3. High Traffic Mode! Cost Runs, Contd

20.21 00.0

				11.41.30.	01/21/0
	17.	ITEM BL BUS TYPE 68LB CASE 111	818 CASE 111		
GEOSTATIONARY PLATFORM PROGR	TFORM PROGRAM COSTS (1960SM)	. (M\$09			
		ROTEF PHASE COST	FIRST UNLT COST	PROD FMASE COST	PLUS
1.1. GEOPLATFORM (BUS)	-TOTAL	264.81	04.40	94.946	1211.30
1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TODLING)	_	17.35 7.64 7.37 2.33	4.72 4.19 .53	47.14 41.88 5.26	
1.1.7. THFRMAL CONTROL		3.36	69.	6.67	
1.1.3. ATTITUDE COMTROL (AV. 1.1.3.1. ATTITUDE CONTROL (AV. 1.1.3.2. ATTITUDE CONTROL (AM.	(AVIONICS)	27.30 25.75 1.55	7.06 5.45 1.61	70.45 54.37 16.00	
1.1.4. PFACTION CONTROL		10.10	16.9	68.95	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BAITERIES 1.1.5.3. POWER COND. & DIST		38.62 16.91 .36 21.35	40.92 28.42 3.48 8.51	263.79	
1.1.6. TTEC		9.43	11.71	117.50	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (RECHANICAL)	_				
1.1.e. INTEGRATION, ASSENBLY,	C C/0			66.73	
1.1.9. PROGRAM MANAGEMENT		6.45	5.92	53.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	RATION	10.15	5.92	59.16	
1.1.11. SYSTEMS TEST ARTICLE		62.95			
1.1.12. SYSTEM TEST OPERATIONS	~	10.66			
1.1.13. 656		11.42			
1.1.14. FSE					
1.1.15. FACILITIES		11.02			

12.37.51.

01/21/80

40.00 Tax

	ITER 02 BUS TYPE	SOMC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1560SM)			
	RDTEE	FARSE		1 1 2
	PHASE	UNIT	PROD	ROTEE
	COST	COST	COST	PLUS
1.1. GERPLATFORM (BUS) -TOTA:			-031	PR 00
	443.80	159.33	575.19	1018.98
1.1.1. STRUCTURE	18.15			
1.1.1.1. STRUCTURE (PRIMARY)	7.53	4.61	16.64	
1.1.1.2. STRUCTURE (SECONDARY)	8.44	3.98	14.36	
1.1.1.3. STRUCTURE (TOOLING)	2.10	.63	2.26	
1.1.2. THERMAL CONTROL				
TO TO SO LHEKNAT CONSKOT	3.74	.95	3.44	
1.1.5. ATTITUDE CONTROL		***	3077	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	36.98	12.98	46.84	
1.1.3.2. ATTITUDE CONTROL (AMCD)	34.66	11.02	39.79	
•	2.32	1.95	7.05	
1.1.4. RFACTION CONTROL				
	24.49	13.99	50.50	
1.1.5. ELECTRICAL POWER	64.96			
1.1.5.1. SOLAR ARPAY	26.39	65.59	236.76	
1.1.5.2. BATTERIES	.46	45.96	165.98	
1.1.5.3. POWER COND & DIST	36 • 11	6.35	22.92	
1.1.4 ****		13.26	47.00	
1.1.6. TTEC	12.60	21.06	74 44	
1.1.7. RENDEZVOUS & DOCKING		22,00	76.01	
1.1.7.1. RENDEZVOUS (AVIONICS)	27.26	4.92	17.75	
1.1.7.2. DOCKING (MECHANICAL)	21.15	4.68	14.74	
TOTAL DOCKING (MECHANICAL)	6.11	.03	3.01	
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O			3.01	
TOWN ASSEMBLY, & CAN		14.69	53.76	
1.1.9. PPOGRAM MANAGEMENT				
	13.94	9.93	35.84	
1.1.10. SYSTEMS ENGRG & INTEGRATION	32.95			
	32.45	10.42	37.63	
1.1.11. SYSTEMS TEST ARTICLE	138.98			
1 1 11 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
1.1.12. SYSTEM TEST OPERATIONS	34.40			
1.1.13. GSF				
	17.04			
1.1.14. FSE				
1.1.15. FACILITIES				
	16.26			

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Table I-3. High Traffic Model Cost Runs, Contd

			11.41.30.	01/21/0
	ITEM 83 BUS TYPE 70MB CASE III	OMB CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS (1960SM)	(196058)			
	ROTGE PHASE COST	FIRST	PROD	ROTLE
1.1. GEOPLATFORM (BUS) -TOTAL	362.35	147.00	772-49	7800
1.1.1. CTBHCTHBE	:			6316611
1.1.1. STRUCTURE (PRIMARY)	19.77	2.2	27.75	
	9.35	22.	3.00	
_	1.2	9		
		2		
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS)	26.03	9.76	51.29	
_	1.84	1.7	9.35	
1.1.4. REACTION CONTROL	19.62	12.01	67.31	
1.1.5. FLECTRICAL POWER	76 07	:		
I. 1. F. 1. SPLAR ARRAY	24.75	46.76	245.73	
1.1.5.3. POWER COMD & DIST	E ;	7.15	37.60	
	30.11	14.60	76.75	
1.1.6. 7760	10.10	17.63	92.05	
1.1.7. REMDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		13.70	72.46	
1.1.9. PROGRAM MANAGEMENT	10.45	9.19	40.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.46	9.19	46.31	
1.1.11. SYSTEMS TEST ARTICLE	128.69			
1.1.12. SYSTEM TEST OPERATIONS	28.96			
1.1.13; GSE	14.13			
lelelt. FSF				
1.1.15. FACILITIES	16.39			

Table I-3. High Traffic Model Cost Runs, Contd

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			12.37.51.	01
	ITEM 64 BUS TYPE	70ME CASE 111		
GFOSTATIONARY PLATFORM PROGRAM COSIS	(1906SM)			
	ROTGE	FARST	PROD	92109
	PHASE	TINU	PHASE	PLUS
	COST	COST	CUST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	+70.40	100.33	465.57	436.37
1.1.1. STRUCTURE	19.93	5.30	14.65	
1.1.1.1. STRUCTURE (PRIMARY)	7.83	4.57	12.54	
1.1.1.2. STRUCTURE (SECONDARY)	9.37	.73	2.01	
1.1.1.3. STRUCTURE (TOOLING)	2.61			
1.1.2. THERMAL COMTROL	3.61	.98	2.71	
1.1.3. ATTITUDE CONTROL	36 . 39	11.53	31.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.07	9.57	26.46	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.32	1.95	5.40	
1.1.4. REACTION CONTROL	20.49	6.27	17.34	
1. 1.5. ELECTRICAL POWER	75.04	79.03	210.57	
1.1.5.1. SOLAP ARRAY	32.57	55.62	152.10	
1.1.5.2. BATTERIES	.47	7.07	21.77	
1.1.5.3. POWER COND & DIST	42.60	10.14	44.63	
1.1.6. TTEC	12.09	21.94	60.68	
1.1.7. PENDEZVOUS & DOCKING	32.16	6.07	16.74	
1.1.7.1. REMDEZVOUS (AVIONICS)	21.29	4.26	11.78	
1.1.7.2. DOCKING (MECHANICAL)	10.90	1.61	5.00	
1.1.8. INTEGRATION, ASSEMBLY, & C/D		15.73	43.51	
1.1.9. PROGRAM MANAGEMENT	14.90	10.49	24.01	
1.1.10. SYSTEMS ENGRG & INTEGRATION	39.23	11.01	30.40	
1.1.11. SYSTEMS TEST ARTICLE	146.83			
1.1.12. SYSTEM TEST OPERATIONS	36.34			
1.1.13. 656	29.14			
1.1.14. FSF				
1.1.15. FACILITIES	15.94			

Table I-3. High Traffic Model Cost Runs, Contd

16.06 225.00

SYSTEM LIFE; UNITS PRODUCED

ITEM 65 DUS TYPE 72.0C CASE II				13.39.50.	01/52/10
PROGRAM COSTS (196.18)  PROGRAM COSTS (196.18)  PROTEE FIRST PROD PRASE COST	=	IEM US BUS TYPE 72	ac case 11		
PROPER   FIRST   PROPER    -1014    124.08   21.34   3215.08    -1014    124.08   21.34   3215.08    -1014    124.08   -1.2   107.59    -1014    124.08   -1.2   107.59    -1014    2.19   -1.2   107.59    -1014    2.19   -1.2   107.59    -1014    2.19   -1.2   107.59    -1014    2.19   -1.2   107.59    -1014    2.19   -1.2   107.51    -1014    2.19   -1.2   107.51    -1014    2.19   -1.2   107.51    -1014    2.19   -1.40   210.38    -1014    2.19   -1.40   210.38    -1014    2.19   -1.40   210.38    -1014    2.19   -1.40   210.38    -1014    2.19   -1.40   210.38    -1014    2.10   210.39    -1014    2.10   210.30    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   210.39    -1014    2.10   2.10   2.10    -1014    2.		1966.583			
-TOTAL 124.00 21.34 3215.00  AARY)  6.78 .62 93.15  BROARY)  2.10 .16 9  2.75 .39 93.15  110.01 20.13 3.20  10.19 3.00 30.20  10.19 3.00 34.2  10.19 3.00 34.2  10.19 3.00 34.2  10.19 3.00 34.2  10.19 3.00 39.20  10.19 3.00 34.2  10.19 3.00 39.21  10.19 3.00 39.21  10.19 3.00 39.21  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01  10.10 12.01		RDT GE PHA SE COST	F IRST UNIT COST	PROD PHASE COST	PLUS PLUS PF00
1	(808)	124.68	21.34	3215.88	3340.76
MARY) 2.10 2.10 2.10 2.10 2.10 2.10 2.10 2.10	KUCTURE	6.79	27.	107.59	
29-13 1-29-13 1-20-13 1-20-13 1-20-13 1-20-13 1-20-13 1-20-13 1-20-13 1-30-19	STRUCTURE STRUCTURE STRUCTURE	 61.5	.16	14.04	
10.13 3.20 10.14 (AMCD) 20.23 2.04 10.19 3.00 10.19 3.00 10.19 3.00 10.19 3.00 10.19 3.00 10.19 3.00 10.10 3.00 10.10 3.00 10.10 4.10 10.1	ERMAL CONT	2.75	.39	99.20	
10.19 3.60 7.29 4.45 3.89 3.42 3.80 3.42 7.29 4.45 7.20 4.45 7.20 4.45 7.20 4.45 7.20 4.45 7.20 4.41 1.40 1.40 1.40 1.40 1.40 1.40 1.40	NTROL CONÍROL CONTROL	29.13 28.23 .90	3.20	307.61	
151 3.09 4.45 3.42 3.09 3.42 3.03 3.03 3.03 3.70 4.18 4.18 4.18 4.18 4.18 4.18 4.18 4.18	1.1.4. REACTION CONTRUL	16.19	3.60	554.37	
9.70 4.18 1.99 5.46 1.33 12.91 1.40 16.61 4.61 7.26	1.1.5. ELECTRICAL POWER 1.1.5.1. SGLAR ANNAY 1.1.5.2. BATTEP IES 1.1.5.3. POWER COND & DIST	7.29 3.89	3.42	671.14 515.71 40.43	
1.99 5.46 1.33 12.91 1.40 16.61 4.61 7.26		9.70	<b>1.1</b>	629.02	
5.46 1.33 12.91 1.40 16.61 4.61 7.38	1.1.7. RENDEZVOUS & DOCKÍNG 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DJCKING (RECHANICAL)				
5.46 1.33 12.91 1.40 16.61 4.61 7.26	INTEGRATION, ASSEMBLY, C		1.99	305.55	
17.91 1.40 16.61 4.61 7.36	PRUGPAN NAN	3.46	1.13	206.37	
SYSTEM TEST UPERATIONS 4.61 SYSTEM TEST UPERATIONS 7.36 FSE FACILITIES 2.06	1.1.10. SYSTEMS ENGRG & INTEGRATION	12.91	1.40	210 - 38	
SYSTEM TEST UPERATIONS 4.61 65E 7.38 FSE FACILITIES	STSTEMS	19.61			
65£ 7.36 FSE 7.26	SYSTEM TEST	<b>:</b> :			
FSE FACILITIES		7.36			
FACILITIES 2.06					
	1.1.15. FACILITIES	2.00			

Table I-3. High Traffic Model Cost Runs, Contd

	ITEM 86 BUS TYPE	7144	13.39.50	•	01/2
GEOSTATIONARY PLATFORM PROGRAM COST	5 (196354)	FIRE CASE II			
	POTCE	FIRST			
	PHASE	UNIT	PROD -	POTE	
1.1	COST	1200	PHASE	PLUS	
1.1. GEOPLATFORM (BUS) -TOTAL		(03)	COST	P#00	
TOTAL	135.46	25.31		7=00	
1.1.1. SINUCTURE		23.31	2830.49	2965.95	
1.1.1.1. STRUCTURE IPRIMAR	7.93	1.17		£ 703.43	E
	5.21	1.06	130.00		
1.1.1.3. STRUCTURE (SECONDARY)	2.33	.11	316.19		
	. 39	•11	12.69		
1.1.2. THERMAL COMIRGE					
	2.77	.46			
1.1.3. ATTITUDE CONTROL		• ••	44.96		
	29.76	3.61			
1.1.3.2. ATTITUDE CONTROL (AVIONICS)	20.76	2.38	404.02		
114	1.61	1.24	265.72		
1.1.4. REACTION CONTROL		****	130.30		
	19.15	4.63			
1.1.5. ELECTRICAL POWER		4.63	517.99		
*********	6.61	5.47			
1.1.3.2. BATTERIES	4.50	4.14	£11.12		
1.1.5.3. POWER COND & DIST	. 37	.16	462.53		
1.1.6. 1746	3.74	.97	40.00		
1116		•••	109.59		
1.1.2 ****	9.80	4.43			
1.1.7. REKUEZVOUS & DOCKING		****	495.45		
1.1.7.2. DOCKING (MECHANICAL)					
Island turners					
1.1.d. INTEGRATION, ASSEMBLY, & C/O					
1.1.9 *****		2.37			
1.1.9. PROGRAM MANAGEMENT		2.00	264.53		
	5.77	1.50			
1.1.20. SYSTEMS ENGRG E INTEGRATION			176.35		
1-1-11 constant	13.65	1.40			
1.1.11. SYSTEMS TEST ARTICLE		1.60	105.17		
	23.60				
1.1.12. SYSTEM TEST OPERATIONS					
1.1.11	5.47				
1.1.13. GSE					
1.1.14	7.83		¥		
1.1.14. FSE					
1.1.16 6.44					
1.1.15. FACILITIES					
	2.45				

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFES UNITS PRODUCED

5			7108 7108 7108	3099.76							400								
13.14.58.			PROS COST	2928.35	91.59 79.06 12.46	40.80	331.62	225.23	610.05 610.05 62.01 197.10	464.79	231.17	273.64	102.49	101.57					
	11 35 CASE 11		FIRST UNIT COST	. 29.19	££2	₹	3.31 2.12 1.16	\$2.24		4.63	2.30	2.13	1.02	1.91					
	ITEM ST BUS TYPE 74AC" CASE II	9805M3	ACT CE PHASE COST	171.41	8.55°	2.78	29.30 28.37	16.30	12.16 6.11 9.3 9.6	•••	19.96		7.54	17.02	25.46	6.30	16.19		2.23
	1	GEOSTATIONARY PLATFURM PPCGRAM COSTS (1980SM)		1.1. GEUPLATFORM (BUS) -TOTAL	1.1.1. STRUCTURE CPRIMAPY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	1.1.2. THEPRAL CONTROL	1.1.3. ATTITUDE CONTROL (AVIONICS) 1.1.3.1. ATTITUDE CONTROL (ANCO)	1.1.4. REACTION CONTFOL	1.1.5. ELECTRICAL FUWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 4.1.5.3. POWER COND E DIST	1.1.6. 1760	1.1.7. KEMDEZYDUS & DOCKING 1.1.7.1. RENDEZYDUS (AVIONICS) 1.1.7.2. DUCKING (NECHANICAL)	1.1.d. INTEGRATION, ASSEMBLY, 6 C/O	1.1.9. PRUGRAM MANAGLMENT	1.1.10. SYSTEMS ENGRG & INTEGRATION	1.1.11. SYSTEMS TEST ARTICLE	1.1.12, SYSTEM TEST OPERATIONS	1.1.13. 65	1.1.14. FSt	1.1.15. FACHITIES

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

16.00 121.00

	•		13.39.50.	61/25/80
	ITEM OR BUS TYPE 7	SPC CASE II		
GEUSTATIONALY PLATFORM PROGRAM COSTS	(1980SM)			
	RDTCE PHASE COST	FIRST UNIT COST	PROD PHASE COST	PDICE PLUS PPOD
1.1. GEOPLATFORM (BUS) -TOTAL	154.45	33.15	2012.77	2967.23
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECOMDAPY) 1.1.1.3. STRUCTURE (TUOLING)	9.29 5.89 2.76 .70	1.79 1.65 .14	191.74 140.04 11.74	
1.1.2. THERMAL COMTROL	2.00	.42	35.32	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CUNTROL (AMCD)	30.74 29.56 1.18	4.32 2.96 1.35	366.68 252.74 114.14	
1.1.4. REACTION CONTROL	20.40	6.26	531.40	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	11.74 6.11 .3n 5.25	8.14 6.17 .54 1.44	690.74 523.36 45.53 121.63	
1.1.6. 1760	9.97	4.00	414.46	
1.1.7. RENDETAGES C DOCKING 1.1.7.1. RENDETAGUS (AVIONICS) 1.1.7.2. DOCKING (MECHAMIC'L)				
1.1.0. INTEGRATION, ASSEMBLY, C C/O		3.10	262.00	
1.1.9. PRUGPAN MANAGEMENT	6.29	2.07	179.25	
1.1.10. SYSTEMS ENGRG E INTEGRATION	14.87	2.17	104.01	
1.1.11. SYSTEMS TEST ARTICLE	24.92			
1.1.12. SYSTEM TEST OPERATIONS	7.16			
1.1.13. 658	8.50			
1.1.14. FSE				
1.1.15. FACILITIES	3.40			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PACOUCED

16.06 94.00

			13.39.58.	c1/25/8C
11	FM 69 BUS TYPE 7	DAE CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS (1	980\$#)			
	ROTEE	FIRST	PROD	POTCE
	COST	COST	COST	PLUS
1.1. GEOPLATFORM (BUS) -TOTAL	175.48	29.26	1984.32	2159.79
1.1.1. STRUCTURE	11.42	2.06	139.93	
1.1.1.1. STRUCTURE (PRIMARY)	6.62	1.78	120.73	
1.1.1.2. STRUCTURE (SECONDARY)	4.62	.28	19.19	
1.1.1.3. STRUCTURE (TOOLING)	. 77	•••		
1.1.2. THEFMAL CONTROL	2.72	.38	26.07	
1.1.3. ATTITUCE CONTROL	29.29	3.30	223.77	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.29	2.07	140.48	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.00	1.23	63.29	
1.1.4. REACTION CONTROL	14.12	1.10	79.93	
1.1.5. ELECTRICAL POWER	12.03	. 8.32	564.31	
1.1.5.1. SULAR ARRAY	6.11	6.17	418.34	
1.1.5.2. BATTERIES	. 39	.63	42.46	
1.1.5.3. POWER COND & DIST	5.53	1.53	103.51	
1.1.6. ITEC	9.80	4.43	300.53	
1.1.7. RENDEZVOUS & DUCKING	25.20	3.11	210.88	
1.1.7.1. PENDEZVOUS (AVIONICS)	19.39	2.33	157.90	
1.1.7.2. DOCKING (MECHANICAL)	5.61	.78	52.97	
1.1.8. INTEGRATION, ASSEMBLY, E C/O		2.73	189.45	
L.1.9. PROGRAM MANAGEMENT	7.74	1.82	123.63	
L.1.1C. SYSTEMS ENGRG & INTEGRATION	18.29	1.91	129.62	
1.1.11. SYSTEMS TEST ARTICLE	25.52			
.1.12, SYSTEM TEST OPERATIONS	6.32			
.1.13. 6St	10.46			
1.1.14. FSE				
L.1.15. FACILITIES	2.17			

Table I-3. High Traffic Model Cost Runs, Contd

16.ve 96.tf

SYSTEM LIVES UNITS PREDUCED

01/25/90			PLUS PR00	2368.08															
13.39.58.			P# 00 PHA SE COS T	2230.20	121.61	14.72	292.30	432.70	534.71 397.91 40.38 96.42	320.10		24.43	134.95	145.40					
	17PC CASE 111		FIRST UNIT COST	34.57	1.69	24.	4.53 3.16 1.37	6.71	6.17 6.17 1.49	5.09		3.23	2.15	2.26					The second of
	ITEM 90 BUS TYPE TTPC CASE III	19805#1	ROTEE PHASE COST	157.89	2.90 2.90 2.90	2.62	31.06 29.78 1.22	20.00	11.93 6.11 .39 5.43	10.64			6.38	15.08	30.16	7.46	. 29.8		3.67
	-	GEOSTATIONARY PLATFERM PROGNAM CUSTS (19858M)		1.1. GEOPLATFORM (BUS) -TOTAL	1.1.1. STRUCTURE 1.1.1.1 STRUCTURE (PRIMARY) 1.1.1.2. STPUCTURE (SECONDARY) 1.1.1.3. STPUCTURE (TUDLING)	1.1.2. THEPMAL CONTROL	1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	1.1.4. REACTION CONTFOL	1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTEMIFS 1.1.5.3. PUWER COND & DIST	1.1.6. 1760	1.1.7. REMDEZYOUS & DOCKING 1.1.7.1. RENDEZYOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)	1.1.6. INTECKATION, ASSEMBLY, & C/O	1.1.9. PROGPAN MANAGEMENT	1.1.10. SYSTEMS ENGPG & INTEGRATION	1.1.11. SYSTEMS TEST ARTICLE	1.1.12. SYSTEM TEST OPERATIONS	1.1.13. 654	1.1.14. f5f	1.1.15. F4CILITIES

STATEM LIFE; UNITS PRODUCED

			13.39.58.	C1
	ITEM 91 BUS TYPE 70	OC' CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	5 (1986SM)			
	*0166	FIRST		Tribunal V
	PHASE	UNIT	PROD	POTEE
	COST		PHASE	PLUS
	6031	COST	COST	PROD
1.1. GEOPLATFORM (BUS) -TOTAL	100.61	32.69	2643.57	2224.39
1.1.1. STRUCTURE	8.94	1.43	89.53	
1.1.1.1. STRUCTURE (PAIMARY)	5.49	1.28		
1.1.1.2. STRUCTURE (SECONDARY)	2.94	.15	79.84	
1.1.1.3. STRUCTURE (TOOLING)	. 50	•••	7.69	
1.1.2. THERMAL CONTROL	2.63	.43	26.76	
1.1.3. ATTITUDE CONTROL			4 - 6 - 6 - 6 - 6 - 6 - 6	(1) ()
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.90	3.70	231.32	
1.1.3.2. ATTITUDE CONTROL (AMCD)	28.86	2.44	152.79	
THE CONTROL (AMCD)	1.64	1.25	70.33	
1.1.4. REACTION CONTROL	17.10	2.79	174.15	
1.1.5. ELECTRICAL POWER	15.77			
1.1.5.1. SOLAR ARRAY	12.76	9.05	565.54	
1.1.5.2. BATTERIES	6.60	6.82	426.22	
1.1.5.3. PUWER COND & DIST	. 39	.63	39.14	
THE PARK COMP & DIST	5.77	1.6C	166.19	
1.1.t. ITEC	16.66	5.14	321.11	
1.1.7. RINDEZVOUS & DOCKING	24.63	2.93	130 12	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.43	2.36	103.33	
1.1.7.2. DOCKING (MECHANICAL)	4.60	.57	147.55 35.78	
1.1.8. INTEGRATION, ASSEMBLY, & C/D		• • • • • • • • • • • • • • • • • • • •	*****	
		3.05	190.99	
1.1.9. PROGRAM MANAGEMENT	7.82	2.04	127.33	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.47	2.14	133.69	
1.1.11. SYSTEMS TEST ARTICLE	26.51			
1.1.12. SYSTEM TEST UPERATIONS	7.06			
1.1.13. 6SE	10.56			
1.1.14. FSt				
1.1.15. FACILITIES	2.78			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

H.OJ 15H.CO

			13.39.58.	01/	25/80
	ITEM 92 BUS TYPE 7	9AB CASE II			
GEOSTATIONARY PLATFORM PRUGRAM COSTS	(198654)				
	RDT EE PHASE COST	FIRST UNIT COST	PROD PHASE COST	PLUS PFOD	
1.1. GEOPLATFORM (BUS) -TOTAL	112.69	22.38	2430.69	2542.78	
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	6.64 5.18 3.08 .39	1.20 1.94 .16	130.51 112.64 17.86		
1.1.2. THERMAL CONTROL	2.68	.37	39.77		
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	22.76 22.63 .74	2.59 1.51 1.07	279.82 163.82 115.99		
1.1.4. REACTION CONTROL	13.00	2.31	218.55		
1.1.5. ELECTRICAL PUWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. PUWER COND & DIST	9.65 4.69 .31 4.45	7.57 5.61 .57 1.40	822.58 609.15 61.82 151.61		
1.1.6. TTEC	7.74	3.75	467.75		T.
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)					
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.10	227.88		
1.1.9. PROGRAM MANAGEMENT	4.77	1.40	151.92		
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.25	1.46	151.92		
1.1.11. SYSTEMS TEST ARTICLE	19.50				
1.1.12. SYSTEM TEST OPERATIONS	4.41				
1.1.13. 656	6.45				
1.1.14. FSE 1.1.15. FACILITIES	2.17				

01/25/80

SYSTEM LIFE; UNITS PRODUCED

16.00 70.00

	ITEM 93 BUS TYPE 80	RC CASE II		
GEDSTATIONARY PLATFORM PROGRAM COSTS	(198C3M)			
	ROTEE	FIRST	PROD	PLUS
	PHA SE	UNIT	PHASE	PROD
	COST	COST	cusi	
	155.57	33.72	1723.73	1679.30
1.1. GEOPLATFORM (BUS) -TOTAL	******		44 34	
1.1.1. STRUCTURE	e. 61	1.25	63.71 54.97	
1.1.1.1. STRUCTURE (PRIMARY)	5.23	1.68	8.74	
1 1 1 2 STRUCTURE (SECONDARY)	3.17	•••		
1.1.1.3. STRUCTURE (TOOLING)	. 40			
	2.85	.44	22.33	
1.1.2. THERMAL CONTROL				
TOTAL THE CONTROL	30.61	4.36	223.85	
1.1.3. ATTITUDE CONTROL (AVIONICS)	29.62	3.03	154.63	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.35	64.97	
Alliance arrange		6.38	326.14	
1.1.4. REACTION CONTROL	20.57	0.10		- 1 J
	12.14	8.36	427.15	
1.1.5. ELECTRICAL POWER	6.11	6.17	315.30	
1.1.5.1. SOLAR ARRAY	.39	.63	32.60	
1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	5.65	1.56	79.65	
1.1.5.3. PUMEN COND & DIST			279.30	
1.1.6. 1160	10.17	5.46	217.30	
1.1.7. RENDEZVOUS & DOCKING	*			
1.1.7.1. RENGEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.7.2. DUCKING THECHANICAL			161.10	
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		3.15	201.10	
	6.32	2.10	107.40	
1.1.9. PROGRAM MANAGEMENT	5772		112.77	
1.1.10. SYSTEMS ENGRG E INTEGRATION	14.93	2.21	112.77	
	29.41			
1.1.11. SYSTEMS TEST ARTICLE	. 7			
1.1.12. SYSTEM TEST GPERATIONS	7.29			
1.11.12.	0.63			
1.1.13. GSE	8.53			
1.1.14. FSE				
	3.76			
1.1.15. FACILITIES	3.10			

13.39.58.

SYSTEM LIFE; UNITS PRODUCED

16.60 70.60 .

	ITEM 94 BUS TYPE	ADFC CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980\$M)			
	POTEE	FIRST	PROD	RDTEE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PR GD
1.1. GLOPLATFORM (BUS) -TOTAL	164.99	37.67	1925.34	2096.33
1.1.1. STRUCTURE	10.11	2.05	104.80	
1.1.1.1. STRUCTURE (PRIMARY)	6.11	1.88	96.05	
1.1.1.2. STRUCTURE (SECONDARY)	3.17	.17	8.74	
1.1.1.3. STRUCTURE (TOOLING)	.83			
1.1.2. THERMAL CONTROL	2.65	.44	22.33	
1.1.3. ATTITUDE CONTROL	31.39	4.87	248.78	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.10	3.46	176.76	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.20	1.41	72.08	
1.1.4. REACTION CONTPOL	21.29	7.45	380.72	•
1.1.>. ELECTRICAL POWER	12.83	9.07	463.56	
1.1.5.1. SOLAR ARRAY	6.60	58.6	348.50	
1.1.5.2. BATTERIES	. 39	.63	32.00	
1.1.5.3. POWER COND & DIST	5.84	1.63	63.07	
1.1.0. 1160	16.17	5. 40	279.30	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DUCKING (MECHANICAL)				
		3.52	179.94	
1.1.4. INTEGRATION, ASSEMBLY, E C/O				
1.1.9. PRUGRAP MANAGEMENT	6.56	2.35	119.96	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.50	2.46	125.96	
1.1.11. SYSTEMS TEST ARTICLE	32.05			
1.1.12. SYSTEM TEST UPERATIONS	8.13			
1.1.13. 656	8.86			
1.1.14. FSE				
1.1.15. FACILITIES	4.45			

Table I-3. High Traffic Model Cost Runs, Contd Srsten Life; UNITS PHIDUCED 16.00 \$2.00

			13.34.58.	01/25/
	ITEM 95 BUS TYPE BIGE CASE II	10f CASE 11		
GEOSTATIONARY PLATFORM PPOGRAM COSTS (	(198CIM)			
	ADTEE PHASE COST	F IRST UNIT COST	PADD PHASE COST	FD16E FLUS FP00
1.1. GENPLATFORM (BUS) -TOTAL	163.34	32.09	1 466.03	1649.34
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	12.17 6.33 4.87	2.13	111.23 97.39 13.84	
1.1.2. THERMAL CONTROL	1.1	••	10.30	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	29.74	3.59 2.31 1.26	164.C0 165.46 58.52	
1.1.4. REACTION CONTROL	14.63	1.30	63.64	
1-1-5- ELECTRICAL PONER 1-1-5-1- SOLM APRAY 1-1-5-2- BATTERIES	12.84	6.02	414.49	
1.1.5.3. POWER COND & DIST	5.66	1.63	74.44	
1.1.6. 1766	4.41	4.00	223.14	
J.1.7. KENDEZVOUS & DOCKING J.1.7.1. RENDEZVOUS (AVIONICS) J.1.7.2. DOCKING (MECHANICAL)	25.t5 19.45 6.29	3.23	147.47	
1.1.8. INTEGRATION, ASSENBLY, E C/O		3.00	137.01	
1.1.9. PRUGRAN MANAGEMENT	7.98	2.00	91.34	
1.1.10. SYSTLMS ENGRG & INTEGRATION	16.65	2.19	16.66	
1.1.11. SYSTEMS 1EST ARTICLE	27.99			
1.1.12. SYSTEM TEST CPERATIONS	6.93			
1.1.13. 6St	10.78			
1.1.14. FSt				
1.1.15. FACILITIES	3.64			

13.39.58.

SYSTEM LIFE; UNITS PADDUCED

16.00 58.00

	ITER 96 BUS TYPE	SZVC CASE III		
GEOSTATIONARY PLATFURM PROGRAM COSTS	(1980SH)			
GEOSTATIONAL PENT ON THOSE		F185T	PROD	ROTCE
	ROTCE	UNIT	PHASE	PLUS
	PHASE	COST	COST	PR 00
	cost	2031		
1.1. GEOPLATFORM (BUS) -TOTAL	170.35	39.84	1716.93	1661.29
	11.11	2.69	115.69	
1.1.1. STRUCTURE	1.63	2.51	108.61	
1.1.1.1. STRUCTURE (PRIMARY)	3.20	,16	7.68	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	1.21			
1.1.1.3. SINDLIDNE LIBERTON				
1.1.2. THERMAL CONTROL	2.87	.45	19.12	
1.1.2. Inchine contract		5.35	229.62	
1.1.3. ATTITUDE CONTROL	31.91	3.08	144.70	
1 1 2 1 ATTITUDE CONTROL (AVIUNICS)	30.53	1.47	62.93	
1.1.3.2, ATTITUDE CONTROL (AMCD)	1.36			
	21.95	8.56	367.57	
1.1.4. REACTION CONTROL			772 12	
and the second second	12.26	8.39	360.43	
1.1.5. ELECTRICAL POWER	6.11	6.17	264.91	
1.1.5.1. SULAR ARRAY 1.1.5.2. BATTERIES	. 39	.63	26.89	
1.1.5.3. POWER COND & DIST	5.76	1.60	68.63	
1.1.7.3. Frate come		5.59	240.C7	
1.1.0. 1160	10.51	3.34		
		-		
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)		>-		
1.1.7.2. DOCKING INECHANICAL)				
1.1.c. INTEGRATION, ASSEMBLY, & C/O		3.72	159.90	
1.1.c. INTEGRATIONS ASSEMBLYS CO.			166.60	
1.1.9. PROGRAM MANAGEMENT	6.68	2.48	100.00	<ul> <li>** ** ** ** ** ** ** **</li> </ul>
		2.61	111.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.80	2.01		
	34.75			
1.1.11. SYSTEMS TEST ARTICLE	3.0.12			
1.1.12. SYSTEM TEST OPERATIONS	. 8.60			
1.1.12. 3131EN 1631 UPERATIONS				
1.1.13. 658	9.63			
1.1.14. FSE				
	5.18			
1.1.15. FACILITIES	1 4 1 1 2 2 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			

Table I-3. High Traffic Model Cost Runs, Contd

U1/25/86

13.59.58.

SYSTEM LIFE; UNITS PRODUCED

e.JU 164.60

				7
	ITEM 97 PUS TYPE	8308 CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(198034)			
	MDTEE	FIRST	2089	ROTEE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PP 00
1.1. GEOPLATFORM (SUS) -TOTAL	110.13	24.44	1602.79	1926.88
1.1.1. STRUCTURE	9.67	1.64	121.05	
	5.69	1.45	167.29	
	3.38	-19	13.75	
1.1.1.3. STRUCTURE (TOOLING)	.60			
1.1.2. THERMAL CONTROL	2.71	.30	27.95	
1.1.3. ATTITUDE CONTROL	23.18	2.84	269.19	
			126.26	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.61	1.12	82.93	
1.1.4. REACTION CONTROL	13.54	2.42	178.14	
1.1.>. ELECTRICAL POWER	10.64	7.80	574.98	
			413.56	
1.1.5.3. POWER COMD & DIST	4.84	1.54	113.45	
1.1.6. 1760	7.84	4.03	297.69	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. IFTEGRATION, ASSEMBLY, & C/O		2.29	169.01	
1.1.9. PROGRAM MANAGEMENT	4.96	1.53	112.67	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.65	1.53	112.67	
1.1.11. SYSTEMS TEST ANTICLE	21.39			
1.1.12. SYSTEM TEST UPERATIONS	4.61			
1.1.13. 656	£ . 7G			
1.1.19. 656				
				100
1.1.15. FACILITIES	2.64			
	1.1. GEOPLATFORM (BUS) -IOTAL  1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECOMPARY) 1.1.1.3. STRUCTURE (SECOMPARY) 1.1.3. ATTITUDE CONTROL 1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL 1.1.3.2. ATTITUDE CONTROL 1.1.3. SOLAR APRAY 1.1.5.1. SOLAR APRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST 1.1.6. ITEC 1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL) 1.1.8. INTEGRATION, ASSEMBLY, & C/O 1.1.9. PROGRAM MANAGEMENT 1.1.10. SYSTEMS ENGRG & INTEGRATION 1.1.11. SYSTEMS TEST ARTICLE 1.1.12. SYSTEM TEST OPERATIONS	GEOSTATIONARY PLATFORM PPOGRAM COSTS (19803A)	#DTCE PHASE UNIT COST COST  1.1. GEOPLATFORM (SUS) -TOTAL 118.13 24.44  1.1.1. STRUCTURE 9.67 1.64  1.1.1.1. STRUCTURE 9.67 1.65  1.1.1. STRUCTURE (SECONDAPY) 5.69 1.45  1.1.1. STRUCTURE (SECONDAPY) 3.38 .19  1.1.1. STRUCTURE (TOOLING) .60  1.1. FIREMAL CONTROL 2.71 .38  1.1. ATTITUDE CONTROL 2.18 2.64  1.1. ATTITUDE CONTROL (AVIONICS) 22.37 1.71  1.1. ATTITUDE CONTROL 22.18 2.64  1.1. ATTITUDE CONTROL (ANCO) .112  1.1. GRACTION CONTROL 13.54 2.42  1.1. STRUCTURE POWER 10.64 7.80  1.1. STRUCTURE 1.00 E DIST 1.05  1.1. STRUCTURE	DOTE   FIRST   PRODE   PMASE   UNIT   PRODE

1-98

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

14.96 51.60

			13.39.58.	C1/25/00
	ITEM SO BUS TYPE O	AEC CASE II		
GEOSTATIONARY PLATFORM PROGRAM CUSTS	(198C1M)			
	POTEE	FIRST	PROD	POTEE
	PHASE	TINU	PHASE	PLUS
	6031	COST	COST	FACO
1.1. GEOFLATFORM (BUS) -TOTAL	170.25	34.94	1522.50	1693.15
1.1.1. STRUCTURE	10.58	2.22		
1-1-1-1. STRUCTURE (PAIMARY)	6.25	2.03	84.77 77.56	
1.1.1.2. STRUCTURE (SECONDARY)	3.42	.19	7.20	
1.1.1.3. STRUCTURE (TOOLING)	.92	•••	7.20	
1.1.2. THERMAL CONTROL	2.90			
	2.40	.46	17.36	
1.1.3. ATTITUDE CONTROL	31.73	5.10	*** **	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.39	3.73	197.50	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.45	142.39 55.11	
1.1.4. REACTION CONTROL				
THE TON CONTROL	21.72	8.15	310.81	
1.1.5. ELECTRICAL POWER				
1.1.5.1. SOLAR ARRAY	13.13 6.60	9.26	352.90	
1.1.5.2. BATTERIES	.39	6.62	259.92	
1.1.5.3. POWER COND & DIST	6.15	.72	27.20	
1.1.4. ****		. 1.72	65.73	
1.1.6. TTEC	10.29	5.84	222.72	
1.1.7. RENDEZVOUS & BOCKING			222.72	
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (RECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		3.73	*** **	
1.1.9. 01/0/04		3.73	142.33	
1.1.9. PROGRAM MANAGEMENT	6.69	2.46	94.00	
1.1.10. SYSTEMS ENGRG & INTEGRATION				
	15.60	2.61	99.63	
1.1.11. SYSTEMS TEST ARTICLE	34.84			
	31104			
1.1.12. SYSTEM TEST OPERATIONS	6.62			
1.1.13. GSt				
	9.64			
1.1.14. FSF				
1.1.15. FACILITIES	4 61			

Table I-3. High Traffic Model Cost Runs, Contd

16.00 \$6.00

SYSTEM LIFE; UNITS PRODUCED

01/52/10																		
•		#016 9105	1544.14															
12.59.58.		PRDD PHASE COST	1301.25	91.76 44.68 73.7	17.64	175.95 123.06 52.68	265.50	256.83 259.20 26.78 26.78	210.67		124.69	99-98	96.36					
	11 JSVC CVSE 11	FIRST UNIT COST	36.40	1.19	*	4.73 1.39 1.90	1.09	9.27 6.02 1.73	5.04		3.45	2.30	14.2					
	ITEM 99 BUS TYPE BSCC CASE II	PHASE COST	162.89	9.26 5.38 3.42 4.6	2.90	31.20 29.95 1.25	21.66	13.16	10.29			6.50	15.37	32.19	11	9.79		4.32
	GEOSTATIONARY PLATFORM PRUGRAM COSTS (1986)		1.1. GLOPLATFORM (BUS) -TOTAL	1.1.1. STRUCTURE (PRIMAPY) 1.1.1.2. STRUCTURE (PRIMAPY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (100LING)	1.1.2. THERMAL CONTROL	1.1.3. ATTITUDE CONTROL (AVIONICS) 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	1.1.4. REACTION CONTROL	1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND 2 DIST	1.1.6. 1160	1.1.7. RENDEZYOUS & BOCKING 1.1.7.1. RENDEZYOUS (AVIOMICS) 1.1.7.2. DOCKING (RECHANICAL)	1.1.6. INTEGRATION, ASSENDET, C C/D	1.1.9. PROGRAM NANAGEMENT	1.1.10. SYSTENS ENGRG & INTEGRATION	1.1.11. SYSTEMS FEST ARTICLE	1.1.12. SYSTEM TEST UPERATIONS	1.1.13. 65£	1.1.15. FSt	L.1.15. FACILITIES

Table 1-3. High Traffic Model Cost Runs, Contd

16.65 47.69

SYSTEM LIFE; UNITS PRUDUCED

			13.39.58.	C1725/10
-	TIEN 13C PUS TYPE BARC" CASS 11	86AC* CASS 11		
GEOSTAJIONASY PLATFURM PPOGRAM COSTS (19609M)	11960111			
	PHASE COST	FIRST UNIT COST	PHASE	3505 8017 8017
GLUPLATFORM (BUS) -TOTAL	194.64	11.11	1335.02	1529.06
1.1.1. STRUCTURE (PRIMAPY) 1.2.1.1. STRUCTURE (SECONDARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TUBLING)	517. 517. 61.	1.9.	7.7.4 8.7.4	
1.1.2. THEFAAL CONFROL	2.40	•	16.69	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIGNICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	36.74 29.56 1.17	77:	165.29	
1.1.4. 4t ACTION CONTROL	16.00	3.50	126.54	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAM ARRAY 1.1.5.2. BATTEPTES 1.1.5.3. POWER COMD & DIST		16.02 7-45 772 1.85	22.23	
1.1.0. 176	16.31	5.92	209.17	
1.1.7.1 RENDEZYOUS & DACKING 1.1.7.1. RENDEZYOUS (AVIONICS) 1.1.7.2. LUCKING (MECHANICAL)	19.52	6.5 5.8 5.8 5.8 5.8	306.65 85.98 20.67	
1.1.0. INTIGRATIUM, ASSENDIT, C C/O		1.53	224.77	
1.1.4. PPGCZEN HAMAGINENT	6.19	2.35	13.30	
1.1.10. SYSTEMS ENGAG E INTEGRATION	19.36	2.47	17.34	
1.1.11. SYSTEMS TEST ARTICLE	32.44			
1.1.12. SYSTEM TEST GPERATIONS	6.15			
1.1.13. 656	11.67			
1.1.14. 756				
1.1.15. FACILITIES	3.40			

High Traffic Model Cost Runs, Contd Table I-3.

70000 00001

to the course of the course of

01/21/00

SOL F

1333.26

12.25.31. PHASE CUST 1124.50 12.10 103.61 25.25 25.25 25.26 25.26 57.87 5.52 35.42 163.54 119.72 ITEM 101 BUS TYPE 61PC CASE 111 \*\*\* FIAST UNIT COST 2.02 ፧ 27.7 1:07 4.9 2.45 6.42 • AD TEE MASE COST 206.76 3.73 ÷ 2.94 31.20 10.9 3.3 1.25 9.00 17.54 ... 10.46 GEOSTATIONARY PLATFORM PROGREM COSTS 1190-381 1-1-3-1- ATTITUDE CUNTROL (AVTONICS) -TOTAL 1-1-1-1. STRUCTURE (PRIMARY) 1-1-1-2. STRUCTURE (SECONDARY) 1-1-1-3. STRUCTURE (TOOLING) 1-1-7- RENDEZVOUS & DOCKING 1-1-7-1- RENDEZ VIUS (AVITNICS) 1-1-7-2- DOCKING (RECHANICAL) 1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. AATTERIS 1.1.5.3. POWER COND & DIST 1.1.3. ATTITUDE CONTROL 1.1. GEOPLATFORM (BUS) 1-1-4. REACTION CUNTROL 1.1.2. THERNAL CONTROL 1.1.1. STRUCTURE 1.1.6. 716

63.39 70.04 103.09 . . 4.13 2.75 2.8 24,32 10.99 1.73 ... 20.05 38.50 9.53 4.21 11.60 1.1.8. THTEGRATION, ASSENDIT, C C/O I-1-10. STITERS ENGRG & INTEGRATION I. I. I. S. SYSTEN TEST OPERATIONS I.I.II. SYSTEMS TEST ARTICLE I. I. P. PROGRAM MANALEPENT 1.1.15. FACILITIES 1.1.13. CSF 1.1.14. FSE

3.00

Table I-3. High Traffic Model Cost Runs, Contd

13.39.56.

C1/25/00

SYSTEM LIFE; UNITS PURDUCED

10.00 30.00

	ITLM 16' BUS TYPE	670C CASE III		
GEOSTATIONARY PLATFURM PROGRAM COSTS	(198L1M)			
	POTCE	FIRST	PR DD	*0166
	PHASE	TIMU	PHASE	PLUS
	6.051	COST	COST	FR00
1.1. GEOPLATFORM (BUS) -INTAL	189.19	40.51	1331.40	1320.67
1.1.1. STRUCTURE	11.00	2.44	61.52	
1.1.1.1. STRUCTURE (PRIMAPY)	6.55	2.41	56.17	
1.1.1.2. STRUCTURE (SECONDARY)	3.45	.23	5.35	
1.1.1.3. STRUCTURE (TOOLING)	1.14	***	,,,,	
1.1.2. THERMAL CONTROL	2.96	.40	11.27	
1.1.3. ATTITUDE CONTROL	32.57	6.03	144 43	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.00	4.50	146.57	
1.1.3.2. ATTITUDE COPTEDL (AMCD)	1.49	1.53	104.66 35.71	
	•••	****	32.11	
1.1.4. REACTION CONTROL	22.75	16.04	234.19	
1.1.3. ELECTRICAL POWER	16.(8	11.04	*** **	
1.1.5.1. SOLAR ARRAY	7.95	9.71	276.25 203.07	
1.1.5.2. MATTEPLES	.40			
1.1 POWER CUMP & DIST	7.73	2.24	20.96 92.32	
1.1.6. 1160	16.55	6.75	257.41	
1.1.7. RENDEZVOUS & DOCKING			.,,,,,	
1.1.7.1. REMDEZAGUS CANIDRICS)				
1.1.7.c. DUCKING (MECHANICAL)				
TITETORE DUCKING (MECHANICAL)				
1.1.0. INTEGRATION, ASSEMPLY, & C/O		4.53	105.75	
1.1.7. PREGRAM MANAGEMENT	7.14	3.02	70.50	
1.1.1. 1957-195 595-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5			10120	
1.1.1 SYSTEMS ENGRG & INTEGRATION	16.09	3.17	74.02	
1.1.11. SYSTEMS TEST ARTICLE	42.31			
1.1.12. SYSTEM TEST OPERATIONS				
TOTAL STATEM LEST SPERATIONS	16.47			
1.1.17. 654	9.65			
1.1.14. FSE				
1.1.15. FACILITIES	4.17			

Table I-3. High Traffic Model Cost Runs, Contd

			13.39.58.	01/25/80
	ITEM 103 BUS TYPE	BTRE CASE II		
GEOSTATIONAPY PLATFORM PPOGRAM COSTS	(198G\$M)			
	RDTEE PHASE COST	FIPST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (AUS) -TOTAL	204.37	46.36	941.29	1145.6¢
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMAPY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TGOLING)	13.46 6.78 5.34 1.34	3.07 2.72 .34	71.50 63.50 8.60	
1.1.2. THEF MAL CONTROL	2.67	.44	10.31	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	30.63 29.40 1.23	4.22 2.85 1.38	98.51 66.37 32.14	
1.1.4. REACTION CONTROL	15.51	1.80	41.89	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	16.64 8.38 .40 7.86	12.59 9.32 .98 2.29	293.65 217.37 22.95 53.34	
1.1.o. ITEC	10.29	5.8+	136.26	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)	26.56 19.57 6.99	3.47 2.47 1.00	80.97 57.66 23.31	
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		3.77	87.97	
1.1.9. PROGPAM MANAGEMENT	6.58	2.51	50.65	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.28	2.64	61.58	
1.1.11. SYSTEMS TEST ARTICLE	35.20			
1.1.12. SYSTEM TEST OPERATIONS	8.71			
1.1.13. GSE	11.59			
1.1.14. FSE				
1.1.15. FACILITIES	4.66			

Table I-3. High Traffic Model Cost Runs, Contd

16.91 20.01

SYSTEM LIFE; UNITS PREDUCED

	11EH 104 BOS 11FE	ITEM 104 BUS ITPE BEFC. CASE 11		
GEOSTATIONARY PLATFORM PPOCRAM COSTS	(198614)			
	NOTEE PHASE COST	FIRST	PROD PHASE COST	RDTCE PLUS PROD
1.1. GLUPLATFORM (BUS) -TOTAL	209.63	****	1004.43	1214.06
F. L. L. STRUCTURE	11.30	2.42	54.80	
STRUCTURE	6.38	2.19	49.53	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOULING)	3.59		99.6	
1.1.2. THEFMAL CONTROL	2.97	••	11.63	
TOPING CONTROL	31.39	4.07	116.03	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.10	*:	31.69	
	18.63	4.29	97.00	
63700 14310132 13 14 1	16.71	12.62	285.17	1
~	4.36	9.32	210.69	
1.1.5.2. BATTERIES	7.50	2.31	52.28	
	16.46	9	153.68	
7311 .0.11				
<b>~ ~</b>	19.63	3.52	36.96	
1.1.7.2. DOCKING (MECHANICAL)	4.78		23.61	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.15	43.67	
1.1.9. PAUGRAA MANAGEMENT	9.00	11.2	62.58	
1.1.10. SYSTEMS ENGAG & INTEGRATION	26.33	2.91	12.59	
1.1.11. SYSTEMS TEST ARTICLE	36.76			
1.1.12., SYSTEM TEST CPERATIONS	9.59			
1.1.13. 65f	11.62			
1.1.14. +St				
571171175	- C.			

Table I-3. High Traffic Model Cost Runs, Contd

01/25/			2016 2009 2009	1429.20															
13.39.58.			PROD PHASE COST	1292.65	88.88	16.92	136.66 86.85 49.21	117.261	437.67 318.16 35.95 83.97	192.30		121.20	69.99	80.80					
	RB CASE 11		FIRST UNIT CGST	32,16	2.37	.41	3.38	3.29	16.89 7,91 2.08	4.78		3.02	2.01	2.01					
	ITEM 105 BUS TYPE BORB CASE II	18088	PHASE COST	136.35	6.33 6.64 6.64	2.79	23.96	14.50	12.47 6.36 .32 6.29	9.00			5.45	11.71	20.14	6.33	7.36		3.70
	21	GEUSTATIONARY PLATFOPH PROGRAM COSTS (1980SM)		.1. GEOPLATFORM (BUS) -TOTAL	.1.1. STRUCTURE (PRIMARY) .1.1.2. STRUCTURE (SECONDARY) .1.1.2. STRUCTURE (SECONDARY) .1.1.3. STRUCTURE (TOULING)	.1.2. THERNAL CONTROL	.1.3. ATTITUDE CONTROL .1.3.1. ATTITUDE CONTROL (AVIONICS) .1.3.2. ATTITUDE CUNTROL (AMCD)	.1.4. REACTION CONTROL	.1.5. ELECTPICAL POWER .1.5.1. SOLAK ARKAY .1.5.2. BATTERIES .1.5.3. PUWER COND & DIST	.1.6. 1160	.1.7. KENDEZVOUS & DOCKING .1.7.1. RENDEZVOUS (AVIONICS) .1.7.2. DOCKING (MECHANICAL)	.1.8. INTEGRATION, ASSEMBLY, & C/O	.1.9. PKDGRAH HANAGENENT	.1.10. SYSTEMS ENGRG & INTEGRATION	.1.11. SYSTEMS TEST ART' CLE	.1.,2. SYSTEM TEST OPERATIONS	.1.13. 65f	.1.14. FSt	1-11-15. FACILITIES

Table I-3. High Traffic Model Cost Runs, Contd

61/21/80

10.00 40.00

			12.25.31.	
	TEM 106 BUS TY	PE 62BE CASE 11		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1986SM)			
	ROTEE	FIRST	FROD	ROTE
	PHASE	UNII	PHASE	PLUS
	cost	COST	COST	PROD
1.1. GFOPLATFORM (BUS) -TOTAL	197.06	38.41	784.66	961.72
1.1.1. STRUCTURE	10.47	1.75	26.00	
1.1.1.1. STRUCTURE (PRIMARY)	5.75	1.51	35.80	
1.1.1.2. STRUCTURE (SECONDARY)	4.09	•24	30.49	
1.1.1.3. STRUCTURE (TOOLING)	.63	•••	4. 1	
1.1.2. THERMAL COMTROL	2.00	.45	4.20	
1.1.3. ATTITUDE CONTROL	30.13	2.46	- P. N	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	20.90	3.65	76.72	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.15	2.53	51.65	
	,	1.33	27.08	
1.1.4. REACTION CONTROL	15.03	1.56	31.80	
1.1.5. ELECTRICAL POWER	16.89	** **		
1.1.5.1. SOLAR ARRAY	8.38	12.60	250.96	
1.1.5.2. MATTERIES	.40	9.32	190.39	
1.1.5.3. POWER COND & DIST	8.12	.94	20.10	
	0.12	2.37	48.49	
1.1.6. 7760	10.36	6.09	124.49	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)	26.76	3.53	. 72.10	
1.1.7.2. DOCKING (MECHANICAL)	19.60	2.50	51.00	
DECKING THECHANICAL	7.17	1.03	21.11	
1.1.4. INTEGRATION, ASSEMBLY, & C/O				
		3.59	73.33	
1.1.9. PROGRAM MANAGEMENT				
	0.33	2.39	40.89	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.68		100	
	17,00	2.51	51.33	
1.1.11. SYSTEMS TEST ARTICLE	33.50			
1.1.12. SYSTEM TEST OPERATIONS				
	8.29			
1.1.13. GSF				
	11.25			
1.1.14. FSF				
1.1.1.				
1.1.15. FACILITIES	3.47			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRUBUCED

			13.39.58.	01/25
1	TEN 137 BUS TYP	E 9CPE CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	1980 SM )			
	POTCE	FIRST	PROD	POTEE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PROD
1.1. GENFLATFORM (BUS) -TOTAL	259.74	42.45	e36.36	1046.11
1.1.1. STRUCTURE	13.75	3.17	62.53	
1.1.1.1. STRUCTURE (PPIMAPY)	6.84	2.82	55.48	
1.1.1.2. STRUCTURE (SECONDARY)	5.51	.36	7.65	
1.1.1.3. STRUCTURE (TOOLING)	1.40			
1.1.2. THERMAL CONTROL	2.90	.46	8.97	
1.1.3. ATTITUDE CONTROL	36.83	4.38	86.28	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.56	2.98	50.66	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.27	1.40	27.60	
1.1.4. REACTION CONTROL	15.71	1.96	37.52	
1.1.5. ELECTPICAL POWER	17.59	13.38	263.56	
1.1.5.1. SOLAR ARRAY	8.79	9.93	195.54	
1.1.5.2. BATTERIES	. 40	.98	19.36	
1.1.5.3. POWER COND & DIST	8.40	2.47	40.64	
1.1.c. ITEC	10.40	6.22	122.53	
1.1.7. RENDEZVOUS & DOCKING	26.85	3.55	69.98	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.61	2.50	49.33	
1.1.7.2. DOCKING (MECHANICAL)	7.24	1.35	20.64	
L.1.6. INTEGPATION, ASSEMBLY, & C/O		3.97	70.16	
1.1.9. PRUGRAM MANAGEMENT	8.73	2.65	52.11	
1.1.10. SYSTEMS ENGRE & INTEGRATION	20.64	2.78	54.72	
1.1.11. SYSTEMS TEST ARTICLE	37.03			
1.1.12. SYSTEM TEST OPERATIONS	9.16			
1.1.13. GSE	11.60			
1.1.14. FSE				
	. 22			
1.1.15. FACILITIES	4.33			

STSTEM LIFE; UNITS PRUDUCED

8.00 50.00

			13.39.58	. 01/25/80
	ITEM 108 BUS TYPE	9CBB CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(198C(M)		1	
	ROTEE	FIRST	PROD	POICE
	PHASE COST	UNIT	PHASE	PLUS
1.1. GERPLATFORM (BUS) -TOTAL	134.68	31.55	1181.69	1315.76
1.1.1. STRUCTURE	10.66	1.82		,
1.1.1.1. STRUCTURE (PRIMARY)	5.02	1.57	68.20 58.67	
1.1.1.2. STRUCTURE (SECONDARY)	4.21	.25	9.33	
1.1.1.s. STPUCTURE (TOOLING)	. 66	•••	7.33	
1.1.2. THERMAL CONTROL	2.62	.42	15.90	
1.1.3. ATTITUDE CONTEQL	23.81	3.27	122.56	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.89	2.07	77.42	
1.1.3.2. ATTITUDE CONTROL (AMCD)	. 92	1.21	45.16	
1.1.4. REACTION CONTROL	14.34	3.13	116.98	
1.1.5. ELECTRICAL POWER	13.24	10.99	431.41	
1.1.5.1. SOLAR ARRAY	£.36	7.91	296.27	
1.1.5.2. BATTEPIES	. 32	.89	33.40	
1.1.5.3. POWER COND & DIST	6.55	2.18	81.66	
1.1.6. 1160	e. 15	5.01	107.65	
1.1.7. RENDEZVOUS & GOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)			•	
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O		2.96	110.73	- 1
1.1.9. PROGRAM MANAGEMENT	5.40	1.97	73.82	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.61	1.97	. 73.82	
1.1.11. SYSTEMS TEST ARTICLE	27.61			
1.1.1¢. SYSTEM TEST OPERATIONS	6.21			
1.1.13. GSE	7.36			
1.1.14. FSE				
1.1.15. FACILITIES	3.50			

Table I-3. High Traffic Model Cost Runs, Contd desti testa SYSTEM LIFE; UNITS PRODUCED

			13.39.58.	01/25/8
	ITEM 139 BUS TYPE 91PB CASE III	91PB CASE III		
GEOSTATIONALY PLATFORM PROGRAM COSTS (19801M)	(198014)			
•	PDTCE	1961		
	PHASE	1141	000	90166
	C051	C051	PHASE	PLUS
1.1. GLOPLATFORM (BUS) -TOTAL				00
	140.48	34.15	1230.54	1371.92
,	11.69	2.49	:	
•	6.42	76.6	69.71	
STRUCTURE .	4.23	47.7	40.65	
CONTINUE CLOSE THE	1.04	63.	93.6	
1.1.2. THERMAL CONTRGL	;			
	78.7	245	15.31	
	24.14	:		
ALLES ATTITUDE CONTROL (AVIONICS)	23.17	96.00	127.19	
	16.	1.25	62.29	
1.1.4. HEACTION CONTROL			76.55	
	14.71	3.5)	126.48	
1.1.5. ELECTRICAL POWER	:			
1-1-5-1 SOLAR ARRAY	02.51	11.72	422.28	
	2:	8.47	305.37	
1.1.5.3. POWER COND & DIST	26.	6.	35.16	
1.1.6. 1766		72.7	81.75	
	6.15	5.61	:	
1.1.7. MENDE PUBLIS & DOCKET			100.00	
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.3.7.2. DOCKING INECHANICAL)				
L.3.5. INTEGRATION. ACCOURT				
CVO PASSEMBLY 6 C/O		3.20	116.40	
1.1.9. PRUGRAM MANAGINENT	4.67			
1.1.16. SYSTEMS FACES C 1. Tres.		61.3	76.93	
NOTI PROTITION OF THE P	11.98	2.13	76.63	
1.1.11. SYSIEMS TEST ANTICLE	29.68		•	
1.1.12. SYSTEM TEST OPERATIONS				
1.44.14. 654	24.6			
	7.53			
1.1.14. FSE				
1.1.15. FACILITIES	9.6			
	#			

Table I-3. Figh Traffic Model Cost Runs, Contd SYSTEM LIFE; UNITS PRIBUCED

			13.39.58.	01/52/10
-	ITEM 11C BUS TYPE 91EC* CASE II	91EC CASE II		
GEDSTAFIONARY PLATFORM PFOCKAN COSTS ()	(196014)			
	K DT GE PHASE COST	FIRST UNIT COST	PROD PHASE COST	KOTEE PLUS PRGD
1.1. GEOPLATFURM (BUS) -TOTAL	217.22	47.60	503.63	1120.25
Jalaha STBuction	:			
STRUCTURE	11.92	2.63	19.61	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	1.12	.26	4.65	
1.1.2. THERMAL CONTROL	3.01	15.	94.0	
	•	:		
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CUNTRUL (AVIONICS) 1.1.3.2. ATTITUDE CUNTROL (AMCD)	31.74	3.73	70.65	
1.1.4. WE ACTION CONTROL				
	14.66	1.7	89.26	
1-1-5. ELECTRICAL POWER	17.67	13.56	257.28	,
1.1.5.2. BATTENIES	6.4	6.63	108.29	
1.1.5.3. PUWER COND & DIST	9.69	2.56	20.30 48.64	
1.1.6. 1760	10.69	7.30	136.54	
1.1.7. RENDEZVOUS & DOCKING	26.92	01.10		
1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. UGCKING (MECHANICAL)	19.69	2.58	99	
1.1.8. INTEGRATION. ASSEMBLY. C. C.D.	:		11:11	
		•••	94.39	
1.1.9. PRUGRAM MANAGEMENT	08.9	2.97	96.26	
1.1.1C. SYSTEMS ENGRG & INTEGRATION	20.81	3.11	59.08	
1.1.11. SYSTEMS TEST ARTICLE	41.52			
1.1.12. SYSTEM TEST OPERATIONS	16.28			
1.1.13. 656	11.90			
1.1.14. FSt				
1-1-15. FACILITIES	10.4			

STATEM LIFE; UNITS PRUDUCED

16.00 23.00

			13.39.58.	C1/25/80
	ITEM 111 BUS TYPE	92VC CASE III		
GCUSTATIGNAKY PLATFORM PPOGRAM COSTS	(196654)			
	ROTCE	FIRST	PROD	PDIGE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PPOD
1.1. EEOPLATFORM (BUS) -TOTAL	223.24	50.14	914.40	1137.64
1.1.1. STRUCTURE	12.64	3.14	57.19	
1-1.1.1. STRUCTURE (PRIMARY)	6.68	2.68	52.47	
1.1.1.2. STRUCTURE (SECONDARY)	4.33	.26	4.72	
1.1.1.3. STRUCTURE (TOOLING)	1.44			
1.1.2. THERMAL CONTROL	3.61	.51	9.27	
1.1.3. ATTITUDE CONTROL	32.05	5.49	100.13	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.65	4.01	73.16	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.40	1.40	26.97	
1.1.4. PEACTION CONTROL	19.55	5.00	92.73	
1.1.5. ELECTRICAL POWER	18.55	14.26	26C.00	
1.1.5.1. SOLAR ARRAY	9.19	10.52	191.94	
1.1.5.2. BATTERIES	.40	1.07	19.57	
1.1.5.3. FOWER COMO & DIST	8.96	2.66	48.49	Ŧ
1.1.6. 1160	10.71	7.36	134.56	
1.1.7. RENDEZVOUS & DOCKING	24.54	3.19	58.27	
1.1.7.1. KENDEZVOUS (AVIONICS)	19.70	2.50	47.12	
1.1.7.2. DUCKING (MECHANICAL)	4.83	.61	11.14	
1.1.0. INTEGRATION, ASSEMBLY, & C/O		4.69	85.46	
1.1.9. PROGRAM MANAGEMENT	8.96	3.12	56.97	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.17	3.28	59.82	
1.1.11. SYSTEMS TEST ARTICLE	43.74			
1.1.12. SYSTEM TEST OPERATIONS	10.62			
1.1.13. 658	12.11			
1.1.14. FSE				
1.1.15. FACILITIES	5.38			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

10.00 22.00

			13.39.56.	c1/25/80
	ITEM 112 BUS TYPE 9	3GC CASE III		
GEOSTATIONARY PLATFURM PROGRAM COSTS	(19801#)			
	FOTEF	FIRST	PR DD	ROTEL
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PROD
1.1. GLOPLATFORM (AUS) -TOTAL	196.40	52.15	912.69	1169.08
1.1.1. STRUCTURE	10.99	1.92	33.60	
1.1.1.1 STRUCTURE (PRIMARY)	5.90	1.66	29.65	
1.1.1.2. STRUCTURE (SECONDARY)	4.38	. 26	4.61	
1.1.1.3. STRUCTURE (TOOLING)	. 71			
1.1.2. THERMAL CONTROL	3,62	.91	8.95	
	32.64	6.10	166.71	
1.1.3. ATTITUDE CONTROL	31.14	4.56	79.01	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	1.56	1.54	26.99	
1.1.4. REACTION CONTROL	22.83	16.19	178.40	
	18.67	14.38	251.76	
1.1.5. ELECTRICAL POWER	9.19	16.52	164.20	
1.1.5.1. SOLAR ARPAY 1.1.5.2. BATTEPIES	.41	1.16	26.35	
1.1.5.3. POWER COND & DIST	9.07	2.70	47.21	
1.1.6. 1160	10.74	7.50	131.34	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.0. INTEGRATIUM, ASSEMBLY, & C/O		4.07	<b>65.30</b>	
1.1.9. PROGRAM MANAGEMENT	7.32	3.25	56.87	
1.1.10. SYSTEMS ENGRG & INTEGRATION	. 17.29	3.41	59.71	
1.1.11. SYSTEMS FEST ARTICLE	45.49			
1.1.12. SYSTEM TEST OPERATIONS	11.26			
1.1.13. GSE	4.69			
1.1.14. FSE				
1.1.15. FACILITIES	£.27			

Table I-3. High Traffic Model Cost Runs, Contd

1 in Sup 5 in	CASe 111	PHASE FLUS	935.e6 1146.04 46.52 47.17 4.35	0.32 111.30 05.60 25.70	244-34 174-15 20-06 46-17 123-47	56.31	
	- BUS TYPE 63NC	F IRST UNII CLST	30.41 3.03 2.76 5.27	. 52 5.95 5.34 1.61	15.25 21.12 1.012 2.62 2.66	3 4 4 8 8	
16,04 20,09	11th 113 -RERUN-	ND TGE PHASE COST	210.18	3.04 33.37 31.74 1.63	19.60 9.59 0.50 10.79	7.63	12.61
SYSTEM LIFF, UNITS PRODUCED	ITEM 113 Genstationary Platform prosram Costs (1960sm)		1.1. GEOPLATFORM (BUS) -TOTAL 1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	1.1.2. THFRMAL CONTROL 1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD) 1.1.4. REACTION CONTROL	1.1.5. EIFCTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST 1.1.6. TTCC 1.1.7. RENDEZYOUS & DUCKING 1.1.7. RENDEZYOUS	1.1.7.2. DOCKING (NECHANICAL) 1.1.9. INTEGRATION, ASSENBLY, & C/O 1.1.9. PROGRAM MANAGENEMT 1.1.9. SYSTEMS ENGRE & INTEGRATION	1.1.11. SYSTEMS TEST ARTICLE 1.1.12. SYSTEM TEST OPERATIONS 1.1.13. GSF 1.1.14. FSF

Table I-3. High Traffic Model Cost Runs, Contd

September 1

STATES CITY DALLS PRUBUCED	DE. C7 DO-01			
			12.25.31.	01/2
	ITEM 114 BUS TYPE 63CE	63CE CASE 11		
GEDSTATIONARY PLATFORM PROGRAM COSTS (19868M)	(189081)			
	PMASE COST	FIRST COST	PADD PHASE COST	2016 7105 7209
1.1. GEOPLATFORM (BUS) -TOTAL	210.40	43.96	16.107	11.619
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOOLING)	11.12 5.00 5.45 5.45	 17.1 75.	31.73 27.44 4.35	
1.1.2. THERMAL CONTROL	2.94	۲.	7.61	
1.1.3.1 ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	30.61 29.36 1.23	2.61 2.63 1.36	67.34 45.33 22.06	
1.1.4. RFACTION CONTROL	15.49	1.79	20.64	
1.1.5. FLECTRICAL PUNFR 1.1.5.1. SOLAR ARRAY	19.70	22°51 11.12 1.25 1.25	244.93	
1.1.5.3. POWER COND & DIST	• 10	74.7		

40.00

19.02

9.72

1.1.0. INTEGRATION, ASSERBLY, 6 C/O

1.1.7. PENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (RECHANICAL)

1.1.6. TTEC

1.1.13. SYSTEMS ENGRG & INTEGRATION

1.1.9. PPDGPAN NANAGENENT

1.1.12. SYSTEM TEST OPERATIONS

1.1.13. 65F 1.1.14. FSE

1.1.11. SYSTEMS TEST ANTICLE

4.35

1.1.15. FACILIFIES

11.78

10..94

99.23 41.13 10.00

2.5 2.51 1.13

27.34 19.60 7.66

10.56

43.64

7 . 3

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRINCICED

14.6. 20.00

			13.39.50.	01/25/00
1	ITEM 115 BUS TY	PE 63FE CASE 11		
GEDSTATIONARY PLATFUPH PROGRAM COSTS	(192019)			
	RDTFE	FIRST	PROD PHASE	POTEE
	PHASE COST	COST	COST	PR 00
1.1. GEGPLATFORM (BUS) -TOTAL	220.45	46.79	749.74	976.19
1.1.1. STRUCTURE	14.25	3.37	54.03	
1.1.1.1. STRUCTURE (PRIMARY)	6.96	2.99	47.93	
1.1.1.2. STRUCTURE (SECONDARY)	5.70	.30	6.11	
1.1.1.3. STRUCTURE (TOOLING)	1.51			
1.1.2. THEPMAL CONTROL	2.94	.47	7.61	
1.1.3. ATTITUDE CONTROL	31.22		75.31	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.09	3.26	52.23	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.33	1.44	23.00	
1.1.4. REACTION CONTPOL	16.00	2.11	33.79	
1.1.5. CECTRICAL POWER	19.71	15.20	244.99	
1.2.5.1. SOLAN ARRAY	9.59	11.12	170.15	
1.1.5.2. BATTERIES	.41	1.25	20.04	
1.1.2.3. POWER COND & DIST	9.71	2.92	46.78	그 경기 중심하다
1.1.0. 1160	10.56	6.00	100.94	
1.1.7. RENDEZVOUS & DOCKING	27.34	3.70	59.23	
1.1.7.1. REMDEZVOUS (AVIONICS)	19.60	2.57	41.15	
1.1.7.2. DOCKING (MECHANICAL)	7.46	1.13	10.00	
1.1.0. INTEGRATION, ESSEMBLY, & C/O		4.37	70.07	
1.1.9. PROGRAM MANAGEMENT	9.64	2.92	45.71	
1.1.16. SYSTEMS FAGING & INTEGRATION	21.35	3.06	49.65	
1.1.11. SYSTEMS TEST ARTICLE	46.01			
1.1.12. SYSTER TEST OPERATIONS	16.13			
1.1.13. 658	12.71			
1.1.14. FSE				
1.1.25. FACILITIES	4.24			

Table I-3. High Traffic Model Cost Runs, Contd

STATES LIFE F MALLS PRUDUICU CU

			11.41.30.	01/21/10
	ITER 116 BUS TYPE 63CB	63CB CASE 11		
GFOSTATIONARY PLATFORM PROGRAM COSTS (1960SM)	1960581			
	MOTE PHASE COST	FIRST UNIT CUST	PN 00 PN 56 C 05 T	2016 71 US 74 US
1.1. GEOPLATFORM (BUS) -TOTAL	144.20	35.91	1093.30	1237,99
	11.20	1.99	40.04	
1.1.1.2 STRIKTURE (PRIMARY)	9.96	1.72	95.36	
1.1.1.3. STRUCTURE (TOOLING)		.27	9.30	
1.1.2. THERMAL CONTROL	2.95	:	13.30	
1.1.3. ATTITUDE CONFACE	24.10			
1-1-3-1. ATTITUDE CONTROL (AJIONICS)	20.00	2.25		
				14
			10000	
	15.30	13.22	402.50	
1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	35.7	1.05	32.10	
	8.26	5.43	169.17	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. PEMDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (RECHAMICAL)			ž	
1.1.9. INTEGRATION, ASSENCATE C C/O		3.37	102.56	
1.3.9. PROGRAM MANAGEMENT	5.65	2.24	•••	
1.1.10. SYSTEMS ENGRE & INTEGRATION	12.15	2.24	66.33	
I.1.11, SYSTEMS TEST ARTICLE	31.42			
1.1.12. SYSTEM TEST OPERATIONS	1,01			
1.1.13. 656	7.0			
1.1.14. FSF				
1.1.15. FACILITIES	3.00			

L1/25/80

13.39.58.

SYSTEM LIFE; UNITS PRODUCED

	ITEM 117 RUS TYPE 1	CIFB CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980\$M)			
	KDTEE	FIRST	PROD	FCICE
	PHASE	UNIT	PHASE	PLUS
	COST	COST		,,,,,
1.1. GEUPLATFORM (BUS) -TOTAL	153.62	39.54	1203.76	1356.77
1.1.1. STRUCTURE	12.46	2.76	84.16	
1.1.1.1. STRUCTURE (PRIMARY)	6.60	2.48	75.42 8.74	
1.1.1.2. STRUCTURE (SECONDARY)	4.67	.29	0.74	
1.1.1.3. STRUCTURE (TOOLING)	1.18			
1.1.2. THERMAL CONTROL	2.08	.45	13.71	
	24.54	3.85	117.30	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CUNTROL (AVIONICS)	23.49	2.56	77.84	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.05	1.30	39.47	
1.1.4. REACTION CONTROL	15.19	4.05	123.24	
1.1.5. ELECTRICAL POWER	16.12	14.12	429.88	
1.1.5.1. SOLAR ARRAY	7.67	10.11	367.71	
1.1.5.2. BATTERIES	. 33	1.22	37.13	
1.1.5.3. POWER COND & DIST	8.12	2.79	85.04	
1.1.0. 1760	8.32	5.65	172.14	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.d. INTEGRATION, ASSEMBLY, & C/O		3.71	112.65	
1.1.9. PRUGRAM MANAGEMENT	5.88	2.47	75.23	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.64	2.47	75.23	
	34.60			
1.1.11. SYSTEMS TEST ARTICLE	34,00			
1.1.12. SYSTEM TEST OPERATIONS	7.78			
1.1.13. 658	7.95			
1.1.14. FSE				
1.1.15. FACILITIES	4.65			

Table I-3. High Traffic Model Cost Runs, Conta

SYSTEM LIFE; UNITS PRODUCED

14.00 17.00

			13.39.50.	61/25/80
	ITEM .18 BUS TYPE 94	HC CASE III		
GEOSTATIONARY PLATFORM PFOGRAM COSTS	(198CSM)			
	ROTEE	FIRST	PPOD	POTCE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PROD
1.1. GEUPLATFORM (BUS) -TOTAL	227.66	66.98	923.36	1151.01
1.1.1. STRUCTURE	12.60	2.26	31.21	
1.1.1.1. STRUCTURE (PRIMARY)	£.18	1.95	26.94	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	4.27	
1.1.1.3. STRUCTURE (TOOLING)	. 87		****	
1.1.2. THEN MAL CONTROL	3.10	.55	7.58	
1.1.3. ATTITUDE CONTROL	33.59	7.23	00.44	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.92	5.60	99.61 77.14	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	22.47	
1.1.4. REACTION CUNTROL	23.94	12.62	173.94	
1.1.5. ELECTRICAL POWER	25.21	20.80	286.68	
1.1.5.1. SOLAR ARKAY	12.14	15.14	208.64	
1.1.5.2. BATTERIES	.42	1.70	23.42	
1.1.5.3. POWER COND & DIST	12.66	3.96	54.61	
1.1.6. ITEC	33.63			
	11.62	8.71	120.11	
1.1.7. PENDEZVOUS & DOCKING				
1.1.7.1. HENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.26	86.30	
		*****	00.30	
1.1.9. PROGRAM MANAGEMENT	8.C6	4.17	57.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.64	4.38	66.41	
1.1.11. SYSTEMS TEST ARTICLE	44.43			
	56.43			
1.1.12. SYSTEM TEST UPERATIONS	14.46			
1.1.13. GSE	10.89			
1.1.14. FSE				
1.1.15. FACILITIES	7.92			

Table I-3. High Traffic Model Cost Runs, Contd

13.39.58.

SYSTEM LIFE; UNITS PRODUCED

	ITEM 119 PUS TYPE 94	EE CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19801M)			
	KDT CE PHASE	FIRST	PROD PHASE COST	POTEE PLUS PPOD
	COST	COST	COST	PPIID
1.1. GEOPLATFORM (BÚS) -TOTAL	242.84	56.53	779.23	1622.07
1.1.1. STRUCTURE	14.66	3.63	50.00	
1.1.1.1. STRUCTURE (PRIMARY)	7.10	3.22	44.33	
1.1.1.2. STRUCTURE (SECONDARY)	6.12	.41	5.67	
1.1.1.3. STRUCTURE (TOOLING)	1.66			
1.1.2. THERMAL CONTROL	3.60	.50	6.94	
1.1.3. ATTITUDE CONTROL	31.77	5.18	71.43	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	36.34	3.69	50.81	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.43	1.50	20.62	
1.1.4. REACTION CONTROL	16.57	2.42	33.33	
1.1.5. ELECTRICAL POWER	25.32	20.63	287.19	
1.1.5.1. SOLAW ARRAY	12.14	15.14	208.64	
1.1.5.2. BATTERIES	.42	1.70	23.42	
1.1.5.3. POWER COND & DIST	12.76	4.00	55.13	
1.1.6. ITEC	10.76	7.56	104.49	
1.1.7. RENDEZVOUS & DOCKING	27.96	3.88	53.50	
1.1.7.1. PENDEZVOUS (AVIONICS)	19.78	2.65	36.49	
1.1.7.2. DUCKING (MECHANICAL)	8.16	1.23	17.60	
i.1.8. INTEGRATION, ASSEMBLY, 6 C/O		5.28	72.83	
1.1.9. PRUGRAM MANAGEMENT	9.64	3.52	48.55	
1.1.10. SYSTEMS ENGRE & INTEGRATION	22.78	3.76	50.98	
1.1.11. SYSTEMS TEST ARTICLE	49.31			
1.1.12. SYSTEM TEST GPERATIONS	12.20			
1.1.13. GSL	13,03			
1.1.14. FSt				
1.1.15. FACILITIES	5.62			

Table 1-3. High Traffic Model Cost Runs, Contd

13.39.58.

SYSTEM LIFE; UNITS PRODUCED

	ITEM 120 BUS TYPE	94EB CASE II		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980\$M)			
	PDT LE PHASE COST	FIRST UNIT COST	PROD PHASE COST	PDTEE PLUS PROD
1.1. GEOPLATFORK (BUS) -TOTAL	166.80	46.00	1 264 . 89	1371.69
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TUOLING)	12.94 6.73 4.93 1.29	2.96 2.65 .31	77.47 69.41 8.06	
1.1.2. THERMAL CONTROL	2.91	.46	12.14	
1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	24.86 23.76 1.10	4.15 2.61 1.33	106.6G 73.68 34.92	
1.1.4. REACTION CONTROL	15.54	4.49	117.00	
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAF ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	19.56 9.15 .33 16.67	17.86 12.74 1.54 3.58	467.76 333.56 40.46 93.74	
1.1.6. 1160	8.41	6.02	157.68	
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
1.1.0. INTEGRATION, ASSEMBLY, & C/O		4.31	112.96	
1.1.9. PRUGRAM MANAGEMENT	6.23	2.98	75.31	
1.1.1G. SYSTEMS ENGRG & INTEGRATION	13.39	2.86	75.31	
1.1.11. SYSTEMS TEST ARTICLE	40.25			
1.1.12. SYSTEM TEST OPERATIONS	9.66			
1.1.13. 656	0.42			
1.1.14. FSE				
1.1.15. FACILITIES	5.21			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

16.00 17.00

			13.39.58.	01/2
	ITEM 121 BUS TYPE	940C' CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(19805#)			
	POTEE	FIRST	P# 00	80744
	PHASE	UNIT	PHASE	ROTEE
	COST	COST	COST	PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	256.27	62.51	861.62	1111.9C
1.1.1. STRUCTURE				1111.70
1.1.1.1. STRUCTURE (PRIMARY)	13.19	3.13	43.11	
1.1.1.2. STRUCTURE (SECONDARY)	6.84	2.82	38.84	
1.1.1.3. STRUCTURE (TOOLING)	4.95	.31	4.27	
THE THE THE THE THE THE	1.40			
1.1.2. THERMAL CONTROL	3.16	.55	7.58	
1.1.3. ATTITUDE CONTPOL	32.70	6.17	05.61	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.19	4.62		
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.:1	1.54	63.74	
	• • • • • • • • • • • • • • • • • • • •	****	21.27	
1.1.4. REACTION CONTPOL	20.24	5.94	81.82	
1.1.5. ELECTRICAL POWER	25.35	26.85	***	
1.1.5.1. SOLAR ARRAY	12.14	15.14	207.36	
1.1.5.2. BATTERIES	.42		208.64	
1.1.5.3. FEWER COND & DIST	12.60	1.70	23.42	
		4.01	55.36	
1.1.6. TTEC	11.62	8.71	120.11	
			120.11	
1.1.7. RENDEZVOUS & DOCKING	24.80	3.34	46.65	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.65	2.71	37.37	
1.1.7.2. DOCKING (MECHANICAL)	4.95	.63	6.68	
1.1.4. *********************************			0.00	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.84	00.53	
1.1.9. PROGRAM MANAGLMENT	9.65			
	7.65	3.89	53.60	
1.1.10. SYST'MS ENGRG & INTEGRATION	22.81	4.09	56.37	
1 1 11			20.31	
i.l.ll. SYSTEMS TEST ARTICLE	54.52			
1.1.12. SYSTEM TEST OPERATIONS	13.40			
	13.49			
1.1.13. GSt	13.64			
1.1.1. 666				
1.1.14. FSE				
1.1.15. FACILITIES				

Table I-3. High Traffic Model Cost Runs, Contd

			13.39.50.	C1/25/CO
GEUSTATIONARY DIAGONA	ITEM 122 BUS TYPE	95DE CASE II		SCHOOLSE SECTION OF SECTION S
GEUSTATIONARY PLATFORM PROGRAM COSTS	(19801M)			
	ROTEE	FIRST		
	PHASE	UNIT	PROD	FOTGE
	COST	COST	PHASE	PLUS
1.1. GEOPLATFORM (BUS) -TOTAL	•	COSI	COST	PP OD
-101VF	242.67			
1.1.1. STRUCTURE		56.74	739.46	962.13
1.1.1.1. STAUCTURE (PRIMARY)	14.18			
1.1.1.2. STRUCTURE (SECONDARY)	6.71	3.05	39.71	
1.1.1.3. STRUCTURE (TOOLING)	6.19	2.63	34.27	
STRUCTURE (TODLING)	1.20	.42	5.44	
1.1.2. THERMAL CONTROL				
THERMAL CONTROL	3.01			
1.1.3. ATTITUDÉ CONTROL	3.01	•51	6.63	
1-1-3 TATTODE CONTROL	31.59			
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.19	5.02	65.38	
1.1.3.2. ATTITUDE CONTROL (AMICO)	1.40	3.54	46.12	
	2.40	1.48	19.26	
1.1.4. KEACTION CONTROL	16.41			
1.1.6	10.41	2.32	30.18	
1.1.5. ELECTRICAL POWER	14 04		55125	
1.1.5.1. SCLAR ARRAY	26.06	21.63	281.83	
1.1.5.2. BATTERIES	12.48	15.69	264.52	
1.1.5.3. PUWER COND & DIST	. 42	1.79	23.31	
	13.16	4.14		
1.1.0. TIEC			54.61	
	16.60	7.76	101 44	
1.1.7. RENDEZVOUS & DOCKING			101.60	
4.1. f.l. WENDETVOUS LANGOUSES	28.10	3.92		
1.1.7.2. DOCKING (MECHANICAL)	19.80	2.66	51.69	
	8.30	1.26	34.71	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		1.20	16.39	
		5.30		
1.1.9. PROGRAM MANAGEMENT		2.30	69.11	
	9.63	3.54		
1.1.10. SYSTEMS ENGRG & INTEGRATION		3.74	46.G7	
STORE ENGRG & INTEGRATION	22.76			
1.1.11. SYSTEMS TEST ARTICLE		3.71	48.38	
STATES TEST WELLETE	49.49			
1.1.12. SYSTEM TEST UPERATIONS				
STATEM TEST UPERATIONS	12.25			
1.1.13. GSF				
	13.62			
1.1.14. +56				
1.1.15. FACILITIES				
LWCITLLIE?	5.26			
	J. 20 .			

Table I-3. High Traffic Model Cost Runs, Contd

			13.39.58.	01/25/86
11	IEM 123 PUS TYPE	SVE CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS ()	(98054)			
	RDTEE	FIRST	PROD	POTCE
	PHASE	TINU	PHASE	PLUS
	COST	COST	COST	PRGD
1.1. GEOPLATFORM (BUS) -TOTAL	248.86	59.01	769.00	1617.86
1.1.1. STRUCTURE	15.53	4.10	53.41	
1.1.1.1. STRUCTURE (PRIMARY)	7.37	3.68	47.98	
1.1.1.2. STRUCTURE (SECONDARY)	€.19	.42	5.44	
1.1.1.3. STRUCTURE (TUDLING)	1.97			
1.1.2. THERMAL CONTROL	3.01	.51	6.63	
1.1.3. ATTITUDE CONTROL	32.06	5.45	71.68	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.58	3.93	51.22	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.48	1.52	19.86	
1.1.4. REACTION CONTROL	16.82	2.59	33.73	
1.1.5. ELECTRICAL PUWER	26.07	21.63	281.89	
1.1.5.1. SOLAR ARRAY	12.48	15.69	264.52	
1.1.5.2. BATTERIES	.42	1.79	23.31	
1.1.5.3. POWER COND & DIST	13.17	4.15	54.06	
1.1.6. ITEC	16.80	7.76	101.68	1 %
1.1.7. RENDEZVUUS & DOCKING	28.10	3.92	51.69	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.80	2.66	34.71	
1.1.7.2. DUCKING (MECHANICAL)	8.30	1.26	16.39	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.51	71.67	
1.1.9. PROGRAM MANAGEMENT	9.80	3.68	47.91	
1.1.10. SYSTEMS ENG'S & INTEGRATION	23.16	3.86	50.31	
1.1.11. SYSTEMS TEST ARTICLE	51.47			
1.1.12. SYSTEM TEST UPERATIONS	12.74			
1.1.13. 656	13.24			
1.1.14. FSt				
1.1.15. FACILITIES	6.06		Con	

Table I-3. High Traffic Model Cost Runs, Contd

13.39.58.

01/52/10

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CASE
95VB
7
PUS
124
ITEM
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SEUSTATIONARY PLATFORM PROGRAM COSTS (198014)	8034)				
	PHASE COST	FIRST	PROD PHASE COST	2016 3105 9800	
1.1. GEOPLATFORM (BUS) -TOTAL	172.75	48.62	1203.56	1376.71	
1.1.1. STRUCTURE (PRIMARY) 1.11.2. STRUCTURE (SECONDARY) 1.11.2. STRUCTURE (TOOLING)	13.71 7.66 5.03 1.62	3.47 3.16 .32	78.17 7.84		
1.1.2. THEPRAL CONTROL	2.93	14.	11.68		
1.1.3. ATTITUDE CONTFOL 1.1.3.1. ATTITUDE CONTRUL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	25.12 23.97 1.15	4.39 3.02 1.37	168.66 74.86 33.33		
1.1.4. REACTION CONTROL	15.64		120.97		
1.1.5. ELECTRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	26.16 9.43 .34 10.39	16.99 13.25 1.63 3.71	466.22 328.07 40.26 91.69		
1.1.6. 1760	6.45	6.18	153.05		
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MFCHANICAL)					
1.1.8. INTEGRATION, ASSEMBLY, C C/O		4.56	112.07		
1.1.9. PROGRAM MANAGEMENT	6.38	3.04	75.25		
1.1.10. SYSTEMS ENGIG & INTEGRATION	13.71	3.04	75.25		
1.1.11. SYSTEMS TEST ARTICLE	45.59				
1.1.12; SYSTEM TEST OPERATIONS	9.57				
1.1.13. 656	8.62				
1.11.14. FSt 1.11.15. FACILITIES	11.6				

Table I-3. High Traffic Model Cost Runs, Contd

4.87

SYSTEM LIFE; UNLIS PRODUCED

1.1.15. FACILITIES

8.00 32.63

			13.39.58.	C1/25/80
	ITEM 125 PUS TYPE	9509 CASE 11		
GEUSTATIONARY PLATFORM PROGRAM COSTS	(198654)			
	RDT &E PHASE CDST	FIRST Unit Cost	PROD PHASE CDST	PDT EE PLUS PROO
1.1. GEOPLATFORM (BUS) -TOTAL	165.47	45.76	1133.00	1296.47
1.1.1. STRUCTURE 1.1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (LOGILING)	12.14 6.21 5.03 .89	2.31 1.99 .32	57.17 49.32 7.84	
1.1.2. THERMAL CONTROL	2.63	.47	11.68	
1.1.3. ATTITUGE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	24.67 23.60 1.17	3.97 2.66 1.31	98.41 65.93 32.48	
1.1.4. REACTION CONTROL	15.34	4.23	104.73	
1.1.5. ELECYRICAL POWER 1.1.5.1. SOLAR ARRAY 1.1.5.2. BATTEPIES 1.1.5.3. POWER CUND & DIST	20.15 9.43 .34 :C.38	16.58 13.25 1.63 3.71	460.13 320.07 40.26 51.00	
1.1.6. 1160	8.45	6.18	153.05	
1.1.7. RENDEZVOUS & DUCKING 1.1.7.1. PENDEZVOUS (AVIONICS) 1.1.7.2. DUCKING (MECHANICAL)				
1.1.d. INTEGRATION, ASSEMBLY, & C/O		4.29	106.22	
1.1.9. PRUGRAM MANAGLMENT	6.19	2.86	79.61	
1.1.1G. SYSTEMS ENGRG & INTEGRATION	13.31	2.86	70.61	
1.1.11. SYSTEMS TEST ARTICLE	46.04			
1.1.12. SYSTEM TEST OPERATIONS	9.01			
1.1.13. 656	8.37			
1.1.14. FSt				

Table I-3. High Traffic Model Cost Runs, Contd

			12.25.31.	01/21/60
	TEM 126 BUS TY	E 65MC CASE 111		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1960SM)	•		
	ROTCE	FIRST	PROD	ADTEE
	PH ASE COST	TINU	PHASE	PLUS
L.1. GEOPLATFORM (BUS) -TOTAL	262.37	76.88	COST	PA UD
		70.00	767.65	1050.02
.l.l. STRUCTURE .l.l.l. STRUCTURE (PRIMARY)	15.57	3.65	30.46	
.1.1.2. STRUCTURE (SECONDARY)	7.07	3.17	31.67	
1.1.1.3. STRUCTURE (SECURDARY)	6.97	.48	4.79	
STATES STRUCTURE COURT HOS	1.63			
.1.2. THERMAL CUNTROL	3.22	.61	6.09	
.1.3. ATTITUDE CONTROL	33.59	7.23	72.14	
.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.92	5.00	55.87	
.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	16.27	
.1.4. REACTION CONTROL	21.15	7.24	72.30	
.1.5. ELFCTRICAL POJER	31.39	27.11		
.1.5.1. SOLAR ARRAY	14.75	14.51	270.63	
. 1.5.2. MATTERIES	.43	2.33	194.76	
.1.5.3. POWER COND & DIST	16.22	5.27	23.22	
. 1.6. TTEC	11.30	10.40	•••	
	11.36	10.50	104.86	
. 1. 7. RENDEZVOUS & DOCKING	25.15	3.54	35.37	
1.7.1. RENDEZVOUS (AVIONICS)	20.04	2.46	20.00	
1.7.2. DOCKING (MECHANICAL)	5.11	.66	6.57	
1.8. INTEGRATION, ASSEMBLY, & C/O		7.19	71.74	
1.9. PROGRAM MANAGEMENT	10.47	4.79	47.03	
1.10. SYSTEMS ENGRG & INTEGRATION	24.74	5.03	50.22	
1.11. SYSTEMS TEST ARTICLE	67.06			
1.12. SYSTEM TEST OPERATIONS	16.60			
1.13. GSF	14.14		-	
.1.14. F3F				
.1.15. FACILITIES				*
The facilities	7.91			

1.1.15. FACILITIES

Table I-3. High Traffic Mcdel Cost Runs, Contd

13.39.58.

C1/25/60

SYSTEM LIFE; UNITS PRODUCED

14.2. 12.00

ITEM 127 BUS TYPE 650E CASE III - RERUN GEOSTATIONARY PLATFURM PROGRAM COSTS (19801M) ROTLE FIRST PROD POTCE PHASE UNIT PHASE PLUS CCSI COST COST PROC 1.1. GEOPLATFORM (BUS) -TOTAL 266.34 67.86 £77.52 \$43.8¢ 1.1.1. STRUCTURE 14.23 1.1.1.1. STRUCTURE (PRIMARY) 3.48 34.74 7.64 1.1.1.2. STRUCTURE (SECTMOARY) 3.11 31.69 5.61 1.1.1.3. STRUCTURE (TUOLING) .37 3.65 1.59 1.1.2. THEPMAL CONTROL 3.11 .55 5.54 1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CULTRGL (AVIONICS) 32.33 5.72 57.16 36.80 1.1.3.2. ATTITUDE CONTROL (AMCD) 4.17 41.67 1.53 1.55 15.49 1.1.4. REACTION CONTROL 17.07 2.76 27.59 1.1.5. ELECTRICAL PUWER 31.34 1.1.5.1. SUI AR ARRAY 27.09 270.47 14.74 1.1.5.2. BATTERIES 19.51 194.76 . 43 1.1.5.3. POWER COND & DIST 2.33 23.22 16.18 5.26 52.49 1.1.6. TTEC 11.16 9.09 90.77 1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 28.69 4.15 41.39 19.95 1.1.7.2. DOCKING (MECHANICAL) 2.80 27.94 8.75 1.35 13.46 1.1.d. INTEGRATION, ASSEMBLY, & C/O 6.34 63.32 1.1.9. PRUGRAM MANAGEMENT 10.20 4.23 42.21 1.1.1C. SYSTEMS ENGRG & INTEGRATION 24.12 4.44 44.32 1.1.11. SYSTEMS TEST ARTICLE 59.19 1.1.12. SYSTEM TEST OPERATIONS 14.65 1.1.13. GSE 13.79 1.1.14. FSE

4.:1

v			11.41.30.	01/2
	ITEM 128 BUS TYPE 6	SGB CASE III		
GENSTATIOMARY PLATFORM PROGRAM COSTS	(1980SM)			
GENSTATIONARY PLATFORM FROM		FIRST	PRUD	ROTLE
	RD TEE	TIMU	PHASE	PLUS
	PHASE	COST	COST	PROD
	COST			
1.1. FEOPLATFORM (BUS) -TOTAL	191.41	57.41	1096.72	1266.12
1.1. FEUPLATIONA COOST		3.47	65.91	
1. 1.1. STRUCTURE	14.22	3.11	58.99	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.37	50.02	
1.1.1.2. STRUCTURE (SECONDARY)	5.60			
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.1.3. TIMOCIOTE TIBOCIOTE		.51	9.71	
1.1.2. THERMAL CONTROL	3.02	.71		
1.1.5. IMERIAL CONTROL		4.81	41.22	
1.1.3. ATTITUDE CONFROL	25.54		64.41	
1.1.5.1. ATTITUDE CONTROL (AVIONICS)	24.31	3.40	26.61	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.23	1.41	20000	
1.1.3.2. ATTITUDE CONTROL TENEST			105.15	
1.1.4. REACTION CONTROL	16.29	5.54		
1.1.4. REALTION CONTROL			447.59	
	24.45	23.59	317.07	
1.1.5. ELECTRICAL POWER	11.29	16.76	40.10	
1.1.5.1. SOLAR ARRAY	.34	2.11	#9.61	
1.1.5.2. BATTERIES 1.1.5.3. POWER CUND & DIST	12.01	4.72	******	
1.1.5.3. PUMER COMO & STS.			137.24	
	8.68	7.23	237021	
1.1.6. TTGC				
1.1.7. RENDEZVOUS & DUCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.7.2. DUCKING THECHANICAL		- 49	102.82	
1.1.0. INTEGRATION, ASSEMBLY, 6 C/O		>.42		
1.1.0. INTEGRATIONS ASSETTED			68.54	
1.1.9. PROGRAM MANAGEMENT	56.6	3.61	0000	
1.1.4. PROGRAM MANAGEMENT			68.54	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.66	3.61		
1.1.10. 3131EH3 EHONG & THIS				
1.1.11. SYSTEMS TEST ARTICLE	50.59			
1.1.11. 2421642 1621 4411662				
1.1.12. SYSTEM TEST OPERATIONS	11.30			
1. 1. 12. 3731E4 1237 Grennis				
	9.22			
1.1.13. GSE				
1.1.14. FSE				
1.1.15. FACILITIES	5.56			
1.1.17. 7.4.16.11.67			2	

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRUDUCED .....

1c.tu 12.11

C1/25/86			P0154	6034	1636-10																		,				
13.39.56.			PR00	COST	753.22		27.33	1.7	7.7		93.10			270.67	23.22	52.69	100.63	35.63	2.52								
	96HC CASE 111		FIRST UNIT	COST	75.44	7. 7	2.36		?•	6.43	9.33		•	27.11	2.33	₽.5	10.00	3.99	2.92	7.0	2,				•		
	ITEM 129 BUS TYPE 96HC" CASE ILI	(198011)	RDT LF PHASE	COS 1	276.97	13.34	6.41		3.24	33.36	1.63	20.92		31.40	÷	16.23	11.45	25.23	20.08 5.15		10.28	24.30	08.80	16.29	13.69		7.48
		GEUSTATIONARY PLATFORM PPOCRAM COSTS (19861M)			1.1. GEOPLATFORM (BUS) -TOTAL		1-1-1-1 STRUCTURE (PRINARY)	1.1.1.3. STRUCTURE (TOOLING)	1.1.2. THEKMAL CUNTROL	<u>۽</u>	1-1-3-2. ATTITUDE CONTACT (AMCD)	1.1.4. REACTION CONTROL	1.1.5. ELECTRICAL POWER	1.1.5.1. SOLAR ARRY	1.1.5.2. BATTERIES		1.1.6. 774	1.1.7. REMPETADUS E NOCKING	1.1.7.2. DUCKING INECHANICAL)	1.1.8. INTEGRATION, ASSENDIT, 6 C/O	L.1.9. PROGRAM MANAGENENT	1.1.10. SYSTEMS ENGRG S INTEGRATION	1.1.11. SYSTEMS TEST ARTICLE	1.1.12, SYSTEM TEST UPERATIONS	2.1.13. 656	1.1.14. FSF	1.1.15. FACILITIES

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRUDUCED

11.11 12.19

			13.39.50.	(1/
ı	TEN 136 BUS TYPE	SEGE CASE III		
GEOSTATIONALY PLATFORM PROGRAM COSTS &	19601M)			
*	POTCE	FIRST	PROD	POTCE
	PHASE	UNIT	PHASE	PLUS
	C ns T	COST	COST	PP 00
1.1. GEMPLATFORM (BUS) -TOTAL	264.59	67.54	674.32	939.30
1.1.1. STRUCTURE	13.63	2.95	29.41	
1.1.1.1. STRUCTURE (PRIMARY)	6.47	2.57	25.66	
1.1.1.2. STRUCTURE (SECONDARY)	5.72	.36	3.75	
1.1.1.3. STRUCTURE (TOOLING)	1.74			
1.1.2. THEFMAL CUNTROL	3.13	.57	5.46	
1.1.1. ATTITUDE CUNTROL	32.22	5.62	56.08	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.71	4.00	46.76	
1.1.3.2. ATTITUDE CONTROL (AMCB)	1.51	1.54	15.30	
1.1.4. PEACTION CONTROL	16.98	2.69	26.91	
1.1.5. ELECTRICAL POWER	31.35	27.09	270.51	
1.1.5.1. SOLAR AREAT	14.74	19.51	194.76	
1.1.5.2. BATTERIES	.43	2.33	22.22	
1.1.5.3. POWER COND & DIST	16.19	5.26	52.53	
1.1.6. TTEC	11.10	9.49	94.83	
A.1.7. RENDEZVOUS & DOCKING	26.78	4.19	41.01	
1.1.7.1. RENDEZYOUS (AVIONICS)	19.98	2.03	29.25	
1.1.7.2. DUCFING (MECHANICAL)	8.80	1.36	13.56	
1.1.0. INTEGRATION, ASSEMBLY, 6 C/O	*	6.31	63.42	
1.1.9. PROGRA, MANAGEMENT	:0.10	4.21	42.61	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.01	4.42	44.11	
1.1.11. SYSTEMS TEST ARTICLE	58.91			
1.1.12. SYSTEM TEST OPERATIONS	14.58			
1.1.13. 656	13.73			
i.1.14. FSF				
1.1.15. FACILITIES	e.32			

1.1.15. FACILITIES

SAZIEM FIRE, ONLY, LABORET			13.39.56.	C1/25/80
			131371301	
	ITEM 131 BUS TYPE 9	6GB CASE III		
GEUSTATIONARY PLATFORM PROGRAM COSTS	(1980sM)			
	RDT EE PHASE	FIRST	PROD Phase	PLUS
	COST	COST	CUST	PPOD
1.1. GEUPLATFORM (BUS) -TOTAL	188.16	56.61	1673.97	1262.13
	13.33	2.74	51.90	
1.1.1. STRUCTURE	6.51	2.36	44.79	
STRUCTURE (PRIMARY)	5.71	.37	7.11	
1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOULING)	1.11			
1.1.2. THERMAL CONTROL	3.65	.52	9.94	
	25.36	4.62	67.71	
1.1.3. ATTITUDE CONTROL	24.17	3.23	61.31	
1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.39	26.40	
1.1.4. REACTION CONTROL	16.09	5.24	99.45	
	24.45	23.59	447.59	
1.1.5. ELECTRICAL POWER	11.29	16.76	317.87	
1.1.5.1. SOLAR ARRAY	.34	2.11	40.10	
1.1.5.2. BATTERIES 1.1.5.3. POWER COND & DIST	12.61	4.72	89.61	
1.1.6. 1160	8.74	7.51	142.45	*.
1 1 7 BENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)			1	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.31	100.68	
1.1.9. PROGRAM MANAGEMENT	6.73	3.54	67.12	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.47	3.54	67.12	
	49.54			
1.1.11. SYSTEMS TEST ARTICLE	11.15			
1.1.12. SYSTEM TEST LPERATIONS				
1.1.13. GSi	4.10			
1.1.14. FSE				

6.17

I-132

Table 1-3. H. th Traffic Model Cost Runs, Contd

11.0 CLOSTATIONARY PLATEGRAN PECCAM COSTS 1902AN   11.0 CLOSTATIONARY PLATEGRAN PECCAM P	TABLE 1-3. TY (IN SYSTEM LIFE) UNITS PACONICED	14.00 11.00	runs, contra		
TITM 132 805 TYPE 9716 CASE III   PROD   P				13.39.58.	01/25/80
Potte   Prior   Prio	=	IEM 132 BUS TYPE 97JC	: CASE 111		
Professionary   Professionary	GEOSTATIONARY PLATFURM PFUGNAM COSTS (1)	(98358)			
COST   COST   PROD		F076F	FIRST	PROD	401¢6
STANCTURE (PRIMAY)   13.21   2.00   22.79		C 0 S T	C051	1800	1,00
13.51	GEUPLATFORM (BUS)	273.17	09.69	627.15	1166.32
DARY)  6.55  6.55  6.42  6.41  6.56  6.43  6.47  6.41  6.42  6.41  6.42  6.42  6.43  6.43  6.43  6.43  6.43  6.43  6.43  6.43  7.44  6.43  7.44  6.43  7.45  6.43  7.45  6.43  7.45  6.43  7.43  6.43  7.45  7.45	The state of the s	13.51	2.80	25.79	
HACI HACI	AE C	6.55	2.42	22.25	
3.26 .63 5.02 34.97 9.20 64.70 14.92 1.76 66.55 (AMCD) 25.49 16.75 154.34 33.32 29.26 269.54 15.65 22.10 194.37 7 17.24 5.66 52.11 17.24 5.66 52.11 17.24 5.66 52.11 17.24 6.69 9.61 17.29 6.39 77.30 17.30 6.39 77.30 17.30 9.03 5.87 54.11 17.045 19.39 17.31		1.15			
(AVIONICS) 34.97 9.20 64.78  (AVIONICS) 33.04 7.44 66.55 1.92 16.75 154.34 25.49 16.75 154.34 15.65 23.20 26.56 15.65 23.07 2.10 24.3 2.20.26 11.24 2.50 25.00 25.49 16.75 154.34 21.24 2.50 25.00 25.	1.1.2. THERMAL CONTROL	3.26	.63	5.62	
(AVIONICS)  1.92  1.92  1.94  1.92  1.94  1.92  1.94  1.92  1.94  1.92  1.94  1.95  1.94	TOTATO SOLVENANT C. C.	34.97	9.20	84.78	
Lanco  1.92   1.76   10.63     25.49   16.75   154.34     33.32   29.26   269.54     15.65   21.10   194.37     17.24   5.66   52.11     17.24   5.66   52.11     17.24   5.66   52.11     17.25   11.28   103.93     Interparion   21.35   5.67   54.11     Interparion   21.35   5.67   54.11     Interparion   19.39   12.21     Interparion   12		33.04	1.4	60.55	
OL		1.92	1.76	16.23	
15.65   20.26   269.54   15.65   15.65   15.65   17.26   194.37   2.50	1.1.4. MEACTION CUATROL	55.49	16.75	154.34	
15.65 21.10 194.37 -43 2.50 23.67 -5.50 52.11 -5.50 52	PONES FIRETRICAL PONES	33.32	29.26	569.84	
11.52   5.50   52.11     11.52   11.28   103.93     10.00CKING		15.65	21.10	194.37	
DCKING AVIGNICS) HAMICAL) SSEMBLY, E C/O SSEMBLY, E	***	17.24	5.66	52.11	
0CKING AVIGNICS) HAMICAL) SSEMBLY» & C/O SSEMBLY» & C/O NENT RENT RENT ARTICLE PERATIONS 19.39 12.21			•	103.63	
0CKING AVIGNICS) HAMICAL) SSEMBLY, E C/O SSEMBLY, E C/O MENT F INTEGRATION 21.35 5.87 54.11 ARTICLE 70.33 JPERATIONS 19.39	1.1.6. 1760	11.52	97.11	103.13	•
INTEGRATION, ASSEMBLY, & C/O  PROGRAM MANAGEMENT  SYSTEMS ENGAG & INTEGRATION  SYSTEMS TEST ARTICLE  SYSTEM TEST UPERATIONS  GSE  FSE	1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)				
ENT 9.03 5.59 51.54  6 INTEGRATION 21.35 5.87 54.11  INTICLE 78.33  IP.39  IZ.21	INTEGRATION, ASSEMBLY, E		6.39	17.30	
6 INTEGRATION 21.35 5.07 WITCLE 70.33 FERATIONS 19.39 12.21		60.6	95.6	51.54	
ARTICLE UPERATIONS		21.35	5.67	54.11	
UP ERATIONS		76.33			
65t FSf	-	19.39			
1.1.14. FSf		12.21			
	1.1.14. FSE				

16.60

1.1.15. FACILITIES

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

8.00 18.00

			13.39.58.	01/25/80
	ITEM 133 BUS TYPE	98NB CASE III		
GEOSTATIONARY PLATFORM PPOGRAM COSTS	(198C1M)			
	ROTLE	FIRST	PROD	POTEE
	PHASE	UNIT	PHASE	PLUS
	COST	COST	COST	PROD
1.1. GLOPLATFORM (BUS) -TOTAL	214.70	69.21	1005.95	1220.65
1.1.1. STRUCTURE	15.36	3.95		
1.1.1.1. STRUCTURE (PRIMARY)	7.29		57.38	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	3.53	51.29	
1.1.1.3. STRUCTURE (TOOLING)	1.67	.42	6.09	
	••••			
1.1.2. THERMAL CONTROL	3.14	.57		
1 1 2 47717000 000000		• • • •	8.28	
1.1.3. ATTITUDE CONTROL	26.20	5.56	45.45	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.85	4.07	80.83 59.19	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.49	21.61	
1.1.4. REACTION CONTROL		••••	21.61	
TOTAL MERCITON CONTROL	16.97	6.66	96.85	
1.1.5. ELECTRICAL POWER			70.07	
1.1.5.1. SOLAR ARRAY	28.76	28.59	415.49	
1.1.5.2. BATTERIES	12.99	20.14	292.67	
1.1.3.3. POWER COND & DIST	. 35	2.60	37.81	
THE PARK COMP & DIST	15.42	5.85	85.61	
1.1.o. TTEC			07.01	
	8.97	8.75	127.11	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DUCKING (MECHANICAL)				
THE POST ING THE CHANGE				
1.1.8. INTEGRATION, ASSEMBLY, 6 C/O				
***************************************		6.49	94.31	
1.1.9. PROGRAM MANAGEMENT				
	7.3c	4.33	62.67	
1.1.1G. SYSTEMS ENGRE & INTEGRATION	16 40			
	15.60	4.33	62.87	
1.1.11. SYSTEMS TEST ANTICLE	60.56			
	00.16			
1.1.12, SYSTEM TEST OPERATIONS	13.63			
	13.63			
1.1.13. 656	9.94			
	7.6.77			
1.1.14. FSE				
1.1.15. FACILITIES	8.62			

Table I-3. High Traffic Model Cost Runs, Contd

36.00 9.00

SYSTEM LIFE; UNITS PREDUCED

13.39.58. 01/25/80	ITEM 134 AIIS TYPE GONE CASE III		ADTEE FINST PROD POTEE PHASE ONIT PHASE PLUS COST COST PPOD	1 -TOTAL 294.25 81.00 £19.62 914.17	F. TARY) 15.38 3.95 30.25 ECUNDARY) 7.29 3.53 27.04 6.22 0.42 3.22	3.23 .62 4.72	0L (AVIONICS) 33.11 6.57 50.28 17.0L (AVIONICS) 31.44 4.94 37.82 17.0L (AMCD) 1.67 1.63 12.46	01 17.76 3.30 25.25	36.99 33.16 2 17.11 23.71 1 2 3.71 1 1 2 3.71 1 1 2 3.71	11.48	29.21 4.40 33.45 20.15 2.99 22.05 1) 9.05 1.41 10.60	7.57	10.89 5.05 38.61	6 INTEGRATION 25.74 5.30 40.54	NATCLE 70.66	EKATIONS 17.49	14.72		7.89
	STOCK MANAGEMENT AND MANAGEMENT AND ADDRESS OF THE PERSON	CICON LENGTH LENGTH PROGRAM COLON		1.1. GEOPLATFORM (BUS) -TOTAL	1.1.1. STRUCTURE (PRIMARY) 1.1.1.2. STRUCTURE (SECONDARY) 1.1.1.2. STPUCTURE (SECONDARY) 1.1.1.3. STRUCTURE (TOULING)	1.1.2. THEPMAL CONTRGL	1.1.3. ATTITUDE CONTROL 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 1.1.3.2. ATTITUDE CONTROL (ANCO)	1.1.4. REACTION CUNTROL	1.1.5. ELECTHICAL POWER 1.1.5.1. SOLAP ARMAY 1.1.5.2. RATTERIES 1.1.5.3. POWER COND E DIST	ונכ	1.1.7. KENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (MECHANICAL)	1.1.d. INTEGRATION, ASSEMBLY, E C/O	1.1.9. PRUGRAM MANAGLMENT	1.1.10. SYSTEMS ENGRG & INTEGRATION	1.1.11. SYSTEMS FEST ARTICLE	1.1.12. SYSTEM TEST UPERATIONS	1.1.13. 651	1.1.14. FSt	1.1.1: FACILITIES

SYSTEM LIFF; UNITS PRODUCED

0.vc 18.60

13.39.56. 01/25/80 ITEM 135 BUS TYPE 98HB CASE 111 GEOSTATIONARY PLAIF CHM PROGRAM COSTS (1986 M) RDTEE FIRST PROD POTEE PHASE UNIT PHASE PLUS COST COST COST PROD 1.1. GEOPLATFORM (BUS) -TOTAL 209.38 67.01 973.92 1163.36 1.1.1. STRUCTURE 14.21 3.06 44.47 1.1.1.1. STRUCTURE (PRIMARY) 6.72 2.64 38.39 1.1.1.2. STRUCTURE (SECONDARY) €.23 .42 6.69 1.1.1. STRUCTURE (TOOLING) 1.29 1.1.2. THERMAL CONTROL 3.14 .57 8.28 1.1.3. ATTITUDE CONTROL 25.92 5.23 76.07 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 24.63 3.78 54.93 1.1.3.2. ATTITUDE CONTROL (AMCD) 1.29 1.45 21.14 1.1.4. REACTION CONTROL 16.67 6.16 89.52 1.1.5. ELECTRICAL POWER 28.75 28.58 415.43 1.1.5.1. SOLAR ARRAY 12.99. 20.14 292.67 1.1.5.2. BATTERIES . 35 2.60 37.81 1.1.5.3. POWER COND & DIST 15.41 5.85 84.95 1.1.6. ITEC 8.97 6.75 127.11 1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DUCKING (MECHANICAL) 1.1.8. INTEGRATION, ASSEMBLY, 6 C/O 85.0 91.31 1.1.9. PROGRAM MANAGEMENT 7.23 4.19 60.67 1.1.1. SYSTEMS ENGRG & INTEGRATION 15.53 4.19 60.87 1.1.11. SYSTEMS TEST ARTICLE 58.63 1.1.12. SYSTEM TEST OPERATIONS 13.19 1.1.13. GSE 9.77 1.1.14. FSt

7.36

1-130

1.1.15. FACILITIES

Table I-3. High Traffic Model Cost Runs, Contd

			13.39.50.	01/25/80
	ITHM 136 BUS TYPE	9 BHF CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980sm)			
	ADTEE	£10.00		
	PHASE	FIRST	PROG	FOTGE
	COST	UPIT	PHASE	PLUS
	C 03 1	COST	COST	FROD
1.1. GEOPLATFORM (BUS) -TOTAL	340.46			*****
	289.65	79.15	EG5.44	895.09
1.1.1. STRUCTURE	14.24		70-200-200 <del>- 0 -</del> 0	073.07
1.1.1.1. STRUCTURE (PRIMAPY)	14.24	3.07	23.47	
4.1.1.2. STRUCTURE ISLCONDARY	6.72	2.65	20.25	
1.1.1.3. STRUCTURE (TOOLING)	6.22	.42	3.22	
	1.29			
1.1.2. THEFMAL CONTROL	-			
	3.23	•62	4.72	
1.1.3. ATTITUDE CONTROL			4.72	
1.1.3.1. ATTITUDE CUATED CAMPONES.	32.81	6.24	47 33	
1.1.3.2. ATTITUDE CONTROL (AMCD)	31.20	4.64	47.73	
TANCOT CONTROL TANCOT	1.61	1.60	35.50	
1.1.4. REACTION CONTROL			12.23	
THE REACTION CONTROL	17.49	3.08		
1.1.6. (1707014)		3.08	23.56	
1.1.5. ELECTRICAL POWER	36.98	22.14		
1.1.5.1. SOLAR ARRAY	17.11	33.15	253.62	
1.1.5.2. BATTERIES	.44	23.71	101.37	
1.1.5.3. POWER COND & DIST		2.95	22.57	
	19.43	6.49	49.67	
1.1.0. 1160	11 40			
	11.40	11.08	84.77	
1.1.7. RENDEZVOUS & DOCKING				
1.1. f.l. RENDEZVOUS LAUTONICES	29.21	4.40	33.65	•
1.1.7.2. DUCKING (MECHANICAL)	26.15	2.99	22.65	
THE CHARLES	9.05	1.41	10.80	
1.1.0. INTEGRATION, ASSEMBLY, & C/O			20.00	
MANAGEMENT & CAO		7.40	56.58	
1.1.9. PRUGRAM MANAGEMENT			30.50	
THE THOUSAN NAMAGENEN!	10.76	4.93		
lalato. Systems success a second		****	37.72	
1.1.10. SYSTEMS ENGRG & INTEGRATION	25.44	5.18		
I.I.II. CYCTEME PECK COMMON		>.10	39.61	
1.1.11. SYSTEMS TEST ARTICLE	69.04			
1 1 12 (	0,004			
1.1.12. SYSTEM TEST OPERATIONS	17.09			
	11.04			
1.1.13. 656	14.54			
	. 7. 27			
1.1.14. FSt				
1.1.15. FACILITIES	7. 24			

1.1.15. FACILITIES

7.00 16.00

			13.39.58.	01/25/80
116	M 137 PUS TYPE 60	UC CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS (19	801M)			
GEOSTATIUNARY PLATFORM FACTORIA		FIRST	PROD	ROTEE
	ROTEE	UNIT	PHASE	PLUS
	PHASE	COST	COST	PR CO
	COST	Cusi	••••	
	325.47	99.03	€00.26	925.73
1.1. GEOPLATFORM (BUS) -TOTAL	323.41			
1010 0000 0000	14.69	3.24	19.63	
1.1.1. STRUCTURE	6.83	2.79	16.94	
CTDISTING [PRIMART)		.44	2.69	
1 1 2 STRUCTURE (SECUMPART)	6.48	• • •		
1.1.1.3. STRUCTURE (TOOLING)	1.36			
1.1.1.3. SINGETONE TIPE		.71	4.29	
1.1.2. THERMAL CONTROL	3.40	•••		
1.1.2. IMERIAL CONTROL	Service Services	8.51	51.57	
INSTRUCE CONTROL	34.52		41.15	
1.1.3. ATTITUDE CONTROL (AVIONICS)	32.68	6.79	10.42	
1.1.3.1. ATTITUDE CONTROL (AMCO)	1.84	1.72	20012	
1.1.3.2. ATTITUDE CONTROL (AMCD)			53.35	
	22.69	8.83	,,,,,	
1.1.4. REACTION CONTROL			222 44	
	41.79	38.38	232.64	
1.1.5. ELECTRICAL POWER	19.05	27.28	165.36	
1-1-5-1. SOLAR ARRAY	.44	3.49	21.14	
1 1.5.2. RATTERIES	22.30	7.61	46.14	
1.1.5.3. POWER COND & DIST	22.30	*		
	11.69	13.58	82.28	
1.1.6. ITEC	11.64	••••		
	** **	3.91	23.72	
1.1.7. RENDEZVOUS & DOCKING	25.77	3.21	19.44	
1 1 7 1 MENDEZAGUS (MATORICS)	20.37	.71	4.28	
1.1.7.2. DOCKING (MECHANICAL)	5.39	• • • •		
		9.26	56.13	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.20		
1.1.8. INTEGRATIONS ASSESSED			37.4C	
MANACEMENT	11.41	6.17	2	
1.1.9. PROGRAM MANAGEMENT			39.27	
SUCCE CHIEGOATION	26.96	6.48	34.27	
1.1.1G. SYSTEMS ENGRG & INTEGRATION				
	86.38			
1.1.11. SYSTEMS TEST ARTICLE				
	21.38			
1.1.12, SYSTEM TEST OPERATIONS				
	15.41			
1.1.13. GSE	17.71			
• • • • • • • • • • • • • • • • • • • •				
1.1.14. FSE				
******	9.79			
	4.14			

Table I-3. High Traffic Model Cost Runs, Contd

01/52/10		RDT&E PLUS PRUD	1001.01																									
14.36.24.	CASE 111	PRUD PHASE COST	663.25	19.63	16.94	40.7	. 4.29	47.64	56.36	11.33	123.79		232.45	21.14	45.95	82.28		99.60		45.57	14.70							
	BUS TYPE GOKC (	FIRST	112.72	, ,	2.79	<b>;</b> .	u.	. !	11.17	1.67	20.75		30.35	07.17	7.50	13.58		;	10.01	7.02	7.37							
16.13	II CR 138 -PERUN-	(1960SM) KDTGE PHASE	COST	311.10	14.69		1.38		36.09	33.95	•	7.97	11.11	19.05	***					66.0		66.62	98.33	54.34	13.45		13.65	•
SYSTEM LIFF; UNITS PROPUCED 1		GENSTATIONARY PLATFORM PROGRAM COSTS (19605M)		1.1. GEOPLATFORM (BUS) -TOTAL		TRUCTURE	1.1.1.2. STRUCTURE (SECUREDIA)	THE PHAL CONTROL		1.1.3. ATTITUDE CONTROL	1.1.3.2. ATTITUDE CONTROL (AMCD)	DOTATO HOLL	1.1.4. REACTION CONTROL	1.1.5. ELECTPICAL POWER	1.1 SOLAR ARRAY	1.1.5.3. POWER COND & DIST	1.1.6. 1746	1.1.7. PENDEZVOUS & DOCKTNG 1.1.7.1. RENDEZVOUS (AVIONICS) 1.1.7.2. DOCKING (RECHANICAL)			1.1.9. PPIGRAM MANAGEMENT	1.1.10. SYSTEMS FNORG & INTEGRATION		-		1.1.13. 65F	1,1,14, FSF	1.1.15. FACILITIES

Table 1-3. High Traffic Model Cost Runs, Contd

*	LIFW T30 BNZ LAbt		13.39.58.	61/25/86
GEUSTATIONARY PLATFORM PPOGRAM COST	5 (198064)	PEN CY21 111		
	POTCE			
	PHASE	FIRST	PROD	ROTLE
	COST	COST	PHASE	PLUS
1.1. GEOPLATFORM (BIIS) -TOTAL		CD31	COST	PROD
	26G.C1	92.74		
1.1.1. STRUCTURE		72.14	925.98	1186.00
1.1.1.1. STPUCTURE (PRIMAPY)	16.30	3.86		
- · · · · · · · · · · · · · · · · · · ·	7.17	3.34	38.59	
1.1.1.3. STEUCTURE (TOOLING)	7.39	.53	33.30	
	1.74	.,,	5.28	
1.1.2. THEPMAL CONTROL				
	3.36	.69	4	
1.1.3. ATTITUDE CONTROL		,	6.90	
Lot of all Allithme Courses.	27.18	6.73		
1.1.3.2. ATTITUDE CONTROL (AMCD)	25.57	5.14	67.21	
	1.51	1.59	51.37	
1.1.4. REACTION CONTROL		,	15.84	
	17.88	8.44		
1.1.5. ELECTRICAL POWER			84.27	
1.1.5.1. SOLAK ARRAY	36.62	40.91		
1.1.5.2. MATTERIES	16.91	28.42	408.50	
1.1.5.3. POWER COND & DIST	• 36	3.98	283.79	
	21.34	6.51	39.77	
1.1.6. ITEC	-		84.94	
1.1.7. RENDEZVOUS & DOCKING	9.44	11.01	117.96	
ATA OF SIA RENGIL TURNE ALUES				
DUCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O				
1.1.9. PROGRAM MANAGEMENT		8.69	86.81	
	8.34			
1.1.10. SYSTEMS ENGRG & INTEGRATION		5.80	57.87	
	17.92		50 Television (	
1.1.11. SYSTEMS TEST ARTICLE	*****	5.40	57.87	
	81.15	*		
1.1.12. SYSTEM TEST UPERATIONS				
	18.26			
1.1.13. 656				
	11.27			
1.1.14. FSF				
1.1.15. FACILITIES				
	10.39			

1.1.15. FACILITIES

13.39.58. 01/25/80 . ITEM 140 BUS TYPE 68JE CASE III GEUSTATIONARY PLATFORM PERGRAM COSTS (19864M) ROTEF FIRST PROD POTEL PHASE UNIT PHASE PLUS COST COST COST PROD 1.1. GEUPLATFORM (BUS) -TOTAL 348.61 107.24 :63.54 912.35 1.1.1. STRUCTURE 3.87 20.36 16.33 1.1.1.1. STRUCTURE (PRIMARY) 7.18 3.34 17.57 1.1.1.2. STRUCTURE (SECONDARY) 2.70 7.41 .53 1.1.1.3. STRUCTURE (TOOLING) 1.74 1.1.2. THERMAL CONTROL 3.46 .75 3.92 1.1.3. ATTITUDE CONTROL 34.23 8.00 42.C1 1.1.3.1. ATTITUDE CONTROL (AVIONICS) 32.36 £.26 32.88 1.1.3.2. ATTITUDE CONTROL (AMCD) 1.00 1.74 9.13 1.1.4. PEACTION CONTROL 18.71 4.18 21.95 1.1.5. ELECTRICAL POWER 49.44 47.03 247.13 1.1.5.1. SOLAH ARKAY 22.14 33.22 174.59 . 45 1.1.5.2. BATTERIES 4.39 23.03 1.1.5.3. POWER COND & DIST 26.84 9.42 49.52 1.1.6. ITEC 12.05 14.73 77.43 1.1.7. RENDEZVOUS & DOCKING 30.26 4.97 26.10 1.1.7.1. RENDEZVOUS (AVIONICS) 20.58 3.42 17.96 1.1.7.2. DOCKING (MECHANICAL) 9.70 1.55 8.14 1.1.d. INTEGRATION, ASSEMBLY, & C/O 10.02 52.67 1.1.9. PRUGRAM MANAGEMENT 12.17 6.68 35.11 1.1.10. SYSTEMS ENGRG & INTEGRATION 28.77 7.02 36.87 1.1.11. SYSTEMS TEST ARTICLE 93.54 1.1.12. SYSTEM TEST OPERATIONS 23.15 1.1.13. 65t 16.45 1.1.14. FSE

16.22

10.00

			12.25.31.	01/21/00
	TIEM TAT BOZ TAN	E PRIE CAPE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1980SM)			
	KDTSE	12814	PROO	BOTCE
	PHASE	UNIT	PHASE	RDTEE PLUS
	1202	1201	COST	PROD
			2031	77.00
1.1. GEOPLATFORM (BUS) -TOTAL	340.72	106.09	568.00	916.72
1.1.1. STRUCTURE	17.37	4.73	24.86	
1. 1. 1. 1. STRUCTURE (PRIMARY)	7.65	4.20	22.06	
1.1.1.2. STRUCTURE (SECONDARY)	7.38	.53	2.77	
L.L.1.3. STRUCTURE (TOOLING)	2.34			
1.1.2. THERMAL CONTROL	3.45	.74	3.49	
1.1.3. ATTITUDE CONTROL	34.40	•.23	43.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.49	6.40	34.04	
1.1.3.2. ATTITUDE CONTPOL (AMCD)	1.91	1.75	9.22	
			,,,,	
1.1.4. PEACTION CONTROL	10.85	4.32	22.69	
1.1.5. ELECTRICAL POWER	49.44	47.03	247.13	
1.1.5.1. SOLAR APRAY	22.14	33.22	174.59	
1.1.5.2. BATTERTES	.45	4.30	23.03	
1.1.5.3. POWER COND & DIST	26.84	9.42	44.52	
1.1.6. *********************************	12.04	14.66	77.03	
1.1.7. RENDEZVOUS & DOCKING	27.93	4.47	23.51	
1.1.7.1. RENDEZ VUUS (AVICNICS)	20.56	3.40	17.60	
1.1.7.2. DOCKING (MECHANICAL)	7.36	1.07	5.63	
	7,72		7.02	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		10.10	53.06	
1.1.9. PROGRAM MANAGEMENT	12.10	6.73	35.39	
1.1.10. SYSTEMS ENGRG & INTEGRATION	28.59	7.07	37.16	
1.1.11. SYSTEMS TEST ARTICLE	94.28			
1.1.12. SYSTEM TEST OPERATIONS	23.33			
1.1.13. 656	16.35			
1.1.14. FSE				
	•			
1.1.15. FACILITIES	10.59			

-142

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

1.1.15. FACILITIES

16.00 5.60

			13.39.58.	41/25/80
	ITEN 142 BUS TYPE	95KC+ CASE III		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(198L1N)			
	ADTEE	FIRST	PROD	*DTEE
	PHA SE	TIMU	PHASE	PLUS
	CO21	COST	COST	PROD
1.1. GLUPLATFORM (SUS) -TOTAL	418.76	146.24	649.10	1067.86
1.1.1. STPUCTURE	17.40	4.33	19.23	
1.1.1.1. STRUCTURE (PRIMARY)	7.40	3.74	16.60	
1.1.1.2. STRUCTURE (SECONDARY)	0.(6	.59	2.64	
1.1.1.3. STRUCTURE (TOOLING)	2.61		•••	
1.1.2. THERMAL COMTROL	3.70	.90	4.60	,
1.1.3. ATTITUDE CONTROL	36.53	12.03	53.39	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.30	10.12	44.91	
1.1.3.2. ATTITUDE CONTROL (AMCU)	2.23	1.91	0.40	
1.1.4. REACTION CONTROL	24.06	12.91	57.31	
1.1.5. ELECTRICAL POWER	60.08	59.50	264.44	
1.1.5.1. SOLAR ARRAY	26.46	41.00	185.55	
1.1.5.2. BATTERIES	. 46	5.72	25.40	
1.1.5.3. POWER COMD & DIST	33.22	12.05	53.40	
1.1.6. 1760	12.63	19.44	06.31	
1.1.7. HENCETVOUS & DOCKING	26.94	4.70	20.85	
1.1.7.1. PENDEZVOUS (AVIONICS)	20.99	3.09	17.27	
1.1.7.2. DOCKING (MECHANICAL)	:.95	.01	3.50	
1.1.0. INTEGRATION, ASSEMBLY, & C/O		13.67	60.06	
1.1.9. PHUGHAN MANAGEMENT	13.43	9.11	40.44	
1.1.1C. SYSTEMS ENGRG L INTEGRATION	31,73	9.57	42.46	
1.1.11. SYSTEMS FEST ARTICLE	127.56			
1.1.12. SYSTEM TEST OPERATIONS	31.57			
1.1.13. 656	10.14			
1.1.1 FSE				

14.90

Table 1-3. High Traffic Model Cost Runs, Contd

TRDIC 1-3. IIIRI				
SYSTEM LIFE FUNITS PRINTINGED	8.66 B.th			
			13.39.50.	67/10
-	ITEM 143 BUS ITPE 166KB CASE 111	CKB CASE 111		
STATE MANAGEMENT OF THE STATE O	980 843			
GE DSTATIONARY PLAIFURN PPUGES		13013	9014	37104
	A016E	7140	PHASE	525
	1500	COST	COST	
	337.06	133.36	614.73	1291.79
1.1. GENPLATFORM 1803)		4.00	34.24	
crew Tuter	10.50		29.62	
3			4.62	
	2.42	}		
	3.42	•	2.32	
1.1.2. THERMAL CUNTRUL			;	
Tours of	59.43	96.0	61.10	
1.1.3. ATTITUDE COMINGE (AVIONICS)	26.65	1.23	3.11	
1.1.3.2. ATTITUDE CONTROL (AMCO)	£	:		
	19.23	11.69	90.16	
1.1.4. REACTION CONTROL			422.84	
STREETS FOR STREET	24.20	61.63	289.99	
LIST SOLAR ARRAY	3.22	6.34	43.50	
e I E S	11.62	13.69	90.6	
1.1.5.3. POWER COND & DIST	•	;	99.01	
1.1.6. 1766	40.0	14.95		
1.1.7. RENDEZVOUS & DOCKING 1.1.7.1. BENDEZVOUS (BVIONICS) 1.1.7.2. DOCKING (M.CHANICAL)			į	
		12.50	19.76	
	4.45	.3	57.17	
1.1.9. PROGRAM MANAGEMENT			57.11	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.38			
1.1.11. SYSTEMS TEST ANTICLE	116.69			
SHOTTEN TEST CPERATIONS	26.26			
	13.45			
1.1.13. 654				
1.1.14. FSE				
1.1.15. FACILITIES	14.63			

Table !-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED

14.00 4.00

			13.39.54.	01/25/00
1	TEM 144 BUS TYPE	106KE CASE 111		
GEOSTATIGNAPY PLATFORM PPOGRAM COSTS (				
	ROTTE			
	PHASE	FIRST	PROD	POTEE
	COST	UNIT	PHASE	PLUS
	.031	COST	COST	PROD
1.1. GEOPLETFORM (BUS) -TOTAL	440.47	152.06	>>1.03	992.30
1.1.1. STRUCTUAS	10.93	4.93	17.60	
1.1.1.1. STRUCTURE (PRIMARY)	7.48	4.26	15.36	
1.1.1.2. STRUCTURE (SECONDARY)	0.00	.60	2.44	
1.1.1.3. STRUCTURE (TOOLING)	2.30	•••		
1.1.2. THEPMAL CONTROL	3.72	.92	3.31	
1.1.3. ATTITUDE CONTROL	35.00	16.60		
1.1 ATTITUDE CONTROL (AVIONICS)	33.60	8.70	36.26	
1.1.3.2. ATTITUDE CONTROL (AMCG)	2.20	1.90	31.42	
		1.70	6.84	
1.1.4. REACTION CONTROL	26. 68	5.74	20.76	
1.1.5. ELECTRICAL POWER	69.51	21		
1.1.5.1. SGLAR ARRAY	30.10	71.00	256.59	
1.1.5.2. BATTERIES	.47	49.63	179.16	
1.1.5.3. POWER COND & DIST	30.94	6.98	25.16	
	30.77	14.47	52.24	
1.1.6. 1740	12.70	20.02	72.29	
1.1.7. PENDEZVOUS & DOCKING	31.69	5.77	20.02	
1.1.7.1. RENDEZVOUS (AVIONICS)	21.11	4.03	14.55	
1.1.7.2. DOCKING IMECHANICAL)	10.59	1.74	6.26	
1.1.m. INTEGRATION, ASSEMBLY, & C/D		14.29		
		14054	51.57	
1.1.4. PRUGRAM MANAGEMENT	14.25	9.92	34.30	
1.1.10. SYSTEMS ENGRG & INTEGRATION	33,67	16.06	36.10	•
1.1.11. SYSTEMS FEST ARTICLE	133.34	*		
1.1.12. SYSTEM TEST OPERATIONS	33.CO			
1.1.13. GSE	19.25			
1.1.14. FSE				
1.1.15. FACILITIES	14.45			

Table I-3. High Traffic Model Cost Runs, Contd

			12.28.51.	01/36/80
	ITEM O BUS TYPE D	F MO		
GEOSTATIONARY PLATFORM PROGRAM COSTS	(1v00sm)			,
	RDTES	FIRST	PRUD	ROTLE
	PHASE	UNIT	PHASE	PLUS
	COST	C 0 > 1	COST	PRUD
1.1. GEOPLATFORM (BUS) -TOTAL	141.34	34.01	34.61	175.94
1.1.1. STRUCTURE	13.70	2.41	2.41	
1.1.1.1. STRUCTURE (PRIMARY)	6.17	1.95	1.95	
1.1.1.2. STRUCTURE (SECONDARY)	6.65	.46	• 46	
1.1.1.3. STRUCTURE (TOOLING)	. # 7	• 10	• 40	
1.1.2. THERMAL CONTROL	3.81	.98	. 78	
1.1.3. ATTITUDE CONTROL	22.51	2.94	2.54	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	21.64	1.30	2.54	
1.1.3.2. ATTITUDE CUNTEDL (AMCD)	.07	1.64	1.30	
1.1.4. REACTION CONTROL	14.26	3.05	3.05	
1.1.5. ELECTRICAL POJER	11.30			
tolotolo SOLAR ARRAY	5.01	9.09	9.04	*
1.1.5.?. BATTERIES	•31	6.72	6.72	
1.1.5.3. POWER COND & DIST	5.38	.03	.63	
	2.30	1.74	1.74	
1.1.6. TTEC	8.70	7.30	7.30	
1.1.7. RENDEZVOUS & DOCKING	15.69	1.26		*
1.1.7.1. RENOEZVOUS (AVIONICS)	13.96	1.07	1.26	
1.1.7.2. DOCKING (MECHANICAL)	1.73	.19	1.07	
		***	.19	
1.1.4. INTEGRATION, ASSEMBLY, & C/O		3.24	3.24	
1.1.9. PROGRAM MANAGEMENT	6.66	2.16	2.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.31	2.16	2.16	
1.1.11. SYSTEMS TEST ARTICLE	15.14			
1.1.12. SYSTEM TEST OPERATIONS	3.41			
1.1.13. 6SF	9.00			
1.1.14. FSE				
1.1.15. FACILITIES	2-16			

APPENDIX J
FUNDING SPREAD ANALYSIS

### APPENDIX J

## **FUNDING SPREAD ANALYSIS**

Funding spreads were generated for the four candidates shown in Table J-1. The cost of each major cost element was spread according to a top level milestone schedule and then accumulated to provide annual funding requirements.

Figure J-1 shows the annual funding requirements for the individual satellite case (Item 148). Costs are tallied for the platform bus and payloads (development and production) and for STS transportation. These funding requirements reflect a nearly constant rate of production and launch of these satellites. This program includes 326 satellites launched over a 16 year period.

Annual funding requirements are shown in Figure J-2 for Item 84 including each of the major program components. This program includes 3 modules launched over a 5 year period and 7 servicing flights over a 14 year period (Operational Mode E).

Figure J-3 shows the annual funding requirements for Item 276 including each of the major program components. This program includes 14 modules launched over an 8 year period and 2 servicing flights (Operational Mode C').

Annual funding requirements are shown in Figure J-4 for Item 337 including each of the major program components. This program includes 5 modules launched over an 8 year period and 2 servicing flights.

The total annual funding requirements for the principal candidates are compared on Figure J-5. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The individual satellite case (Item 148) is also shown for reference. The total program funding requirements shown include costs for bus, payloads and transportation.

The total annual funding requirements, excluding payloads, for the principal candidates are compared on Figure J-6. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The individual satellite case Item 148 is shown for comparison.

Figure J-7 compares the total annual funding requirement, excluding payloads, for the three principal candidates. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The same data are plotted in Figure J-8 with an expanded scale to accentuate the differences.

The final cost results of the candidate options are shown in Table J-2 together with the individual satellite case for comparison. Total program costs are shown

as are program cost excluding the cost of the payloads themselves. Costs are shown in 1980 constant dollars together with the net present value assuming a 10% discount rate.

As may be seen, Item 337 shows minimum cost followed by Items 276 and 84. This trend is also confirmed when discounted dollars are considered.

All of the potential options are at least a factor of four cheaper than the individual satellite case for the accomplishment of the assumed mission model.

ITEM 148	BEST SATELLITE OPTION (108/STD. TDRSS BUS/MULT. P/
ITEM 84	BEST FREQUENTLY SERVICED OPTION
ITEM 276	BEST CASE II (MODULE & OTV IN SINGLE SHUTTLE)
ITEM 337	BEST OVERALL OPTION

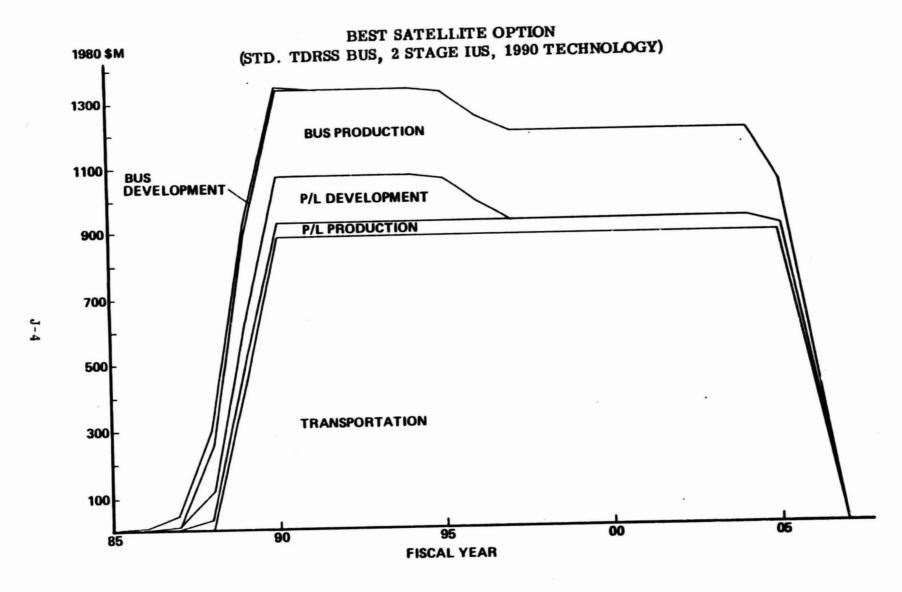


Figure J-1. Item 148 Annual Funding Requirements

BEST FREQUENTLY-SERVICED OPTION (E)
2-STAGE EXPENDABLE OTV (m)
4 SHUTTLE LAUNCHES PER MODULE (2 FOR BUS, 2 FOR OTV) (III')
3 MODULES (1 OVER ATL, 2 OVER WH IN FORMATION) (K)
SUPPORTS LARGEST MISSION SET (V)

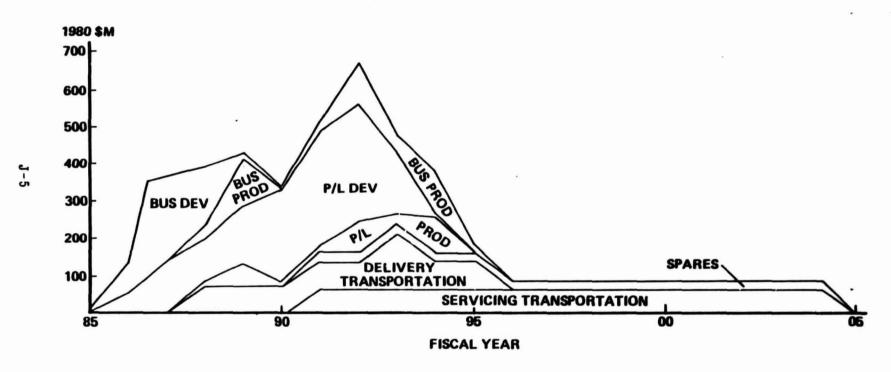


Figure J-2. Item 84 Annual Funding Requirements

# BEST CASE II (SINGLE-SHUTTLE) OPTION SINGLE-STAGE EXPENDABLE OTV (d) HIGHLY REDUNDANT MODULES, SERVICED EVERY 8 YEARS (C') 14 MODULES DOCKED AT GEO (7 OVER WH, 7 OVER ATL), SHARING SUBSYSTEMS (J) SUPPORTS LARGEST MISSION SET (V)

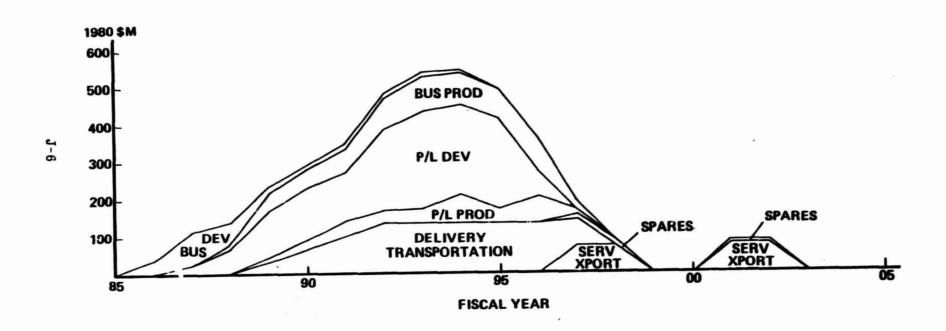


Figure J-3. Item 276 Annual Funding Requirements

BEST OVERALL OPTION

2-STAGE REUSABLE LGW THRUST OTV (j)

SPACE-MATED (CASE III)

HIGHLY REDUNDANT MODULES, SERVICED EVERY 8 YEARS (C')

5 MODULES DOCKED AT GEO (2 OVER WH, 3 OVER ATL), SHARING SUBSYSTEMS (J)

SUPPORTS LARGEST MISSION SET (V)

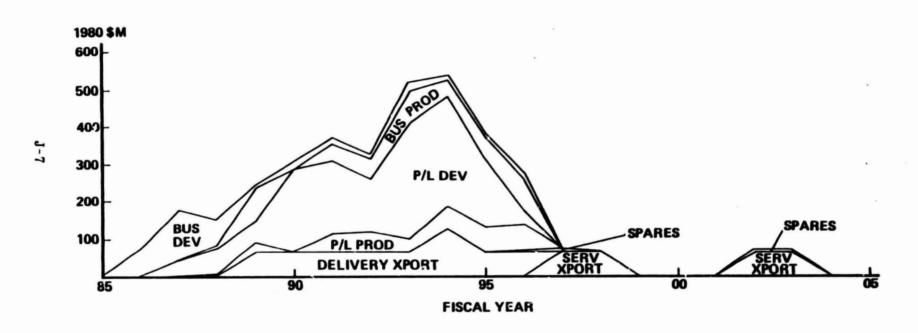
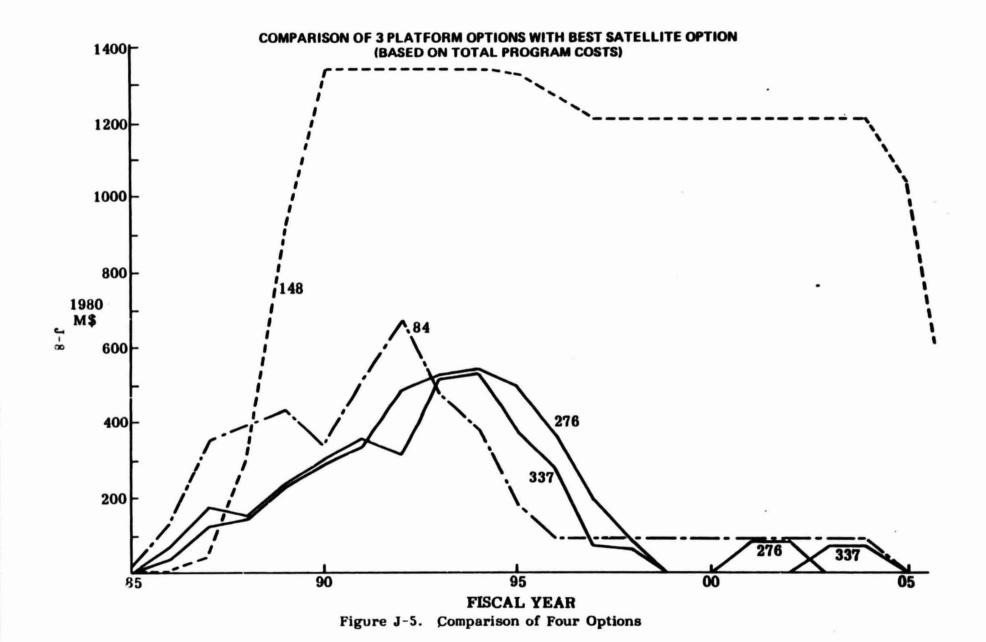


Figure J-4. Item 337 Annual Funding Requirements



## 3 PLATFORM OPTIONS COMPARED TO BEST SATELLITE OPTION

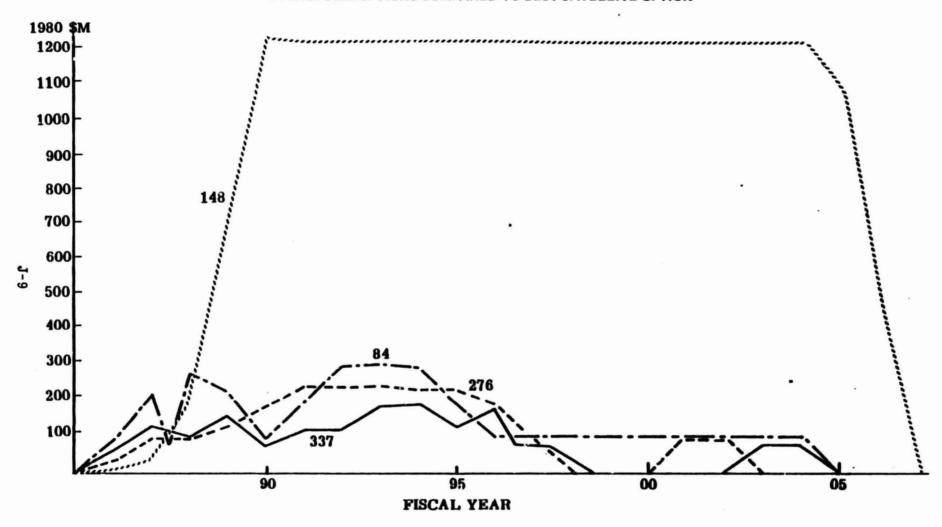


Figure J-6. Comparison of Four Options, Excluding Payload Costs

# **PLATFORM OPTIONS ONLY**

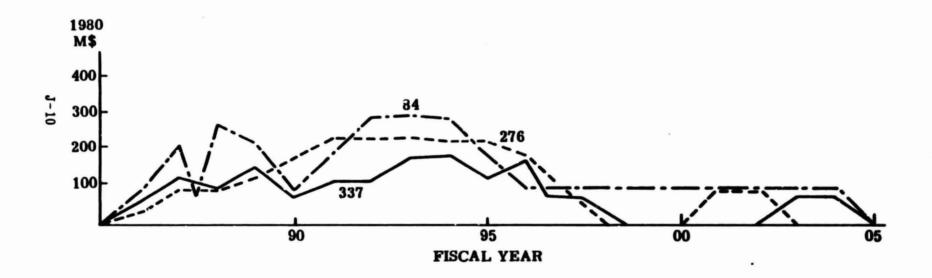


Figure J-7. Comparison of Three Platform Options

1

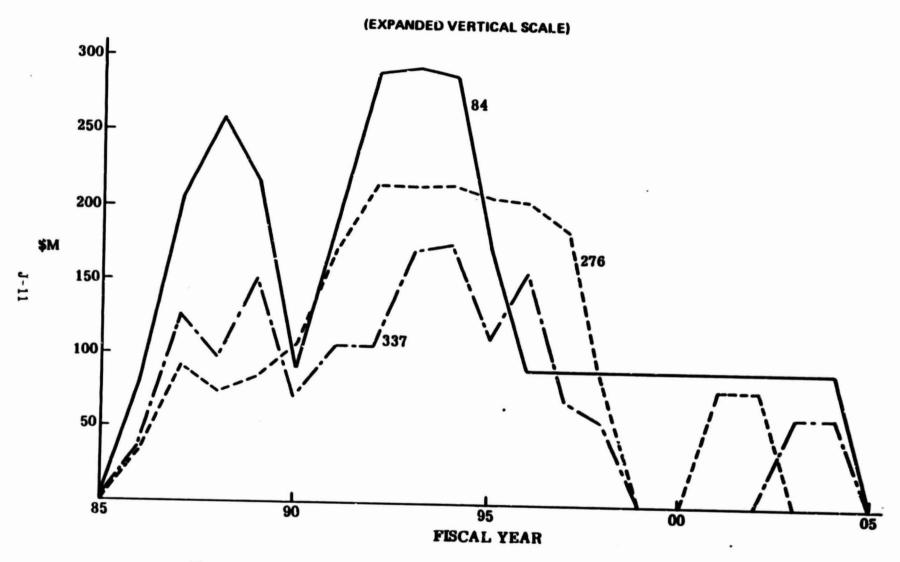


Figure J-8. Comparison of Three Platform Options (Expanded Scale)

Table J-2. Final Results

ITEM		TAL M COSTS	COST W/O PAYLOADS		
#	1980 \$M	NPV \$M	1980 <b>\$M</b>	NPV \$M	
* 337	3460	1564	1696	787	
† <sub>276</sub>	3997	1740	2122	893	
84	4703	2285	3870	1283	
148	21659	7790	19662	6858	

<sup>\*</sup> RECOMMENDED BASELINE CONCEPT

<sup>†</sup> RECOMMENDED BACKUP CONCEPT

# APPENDIX K RADIATION ENVIRONMENT OF INTELSAT V

#### RADIATION ENVIRONMENT

# PREFACE

Hereafter the radiation environment used for the INTELSAT V design is given as a reference. The contractor shall consider this as preliminary and subject to future updating.

#### 1. INTRODUCTION

The selection of spacecraft components shall be such as to insure all performance specifications are met during operation in the space environment. Since this environmental model is a best estimate set forth below for a seven-year mission commencing in 1978, based on available experimental data, it is anticipated that modifications of the model, as mutually agreed upon by INTELSAT and the contractor may be desirable at some date prior to acceptance of the design definition.

#### 2. SYNCHRONOUS ORBIT CONDITIONS

# 2.1 Electrons

The electron environment in synchronous equatorial orbit based on te's AE4 model, can be represented by the following expressions for time-averaged integral flux spectrum:

$$E \le 0.3 \text{ MeV}$$
:  $\log_{10} \Phi_{e}(>E) = -3.0E + 7.7$   
 $0.30 \le E \le 3.5 \text{ MeV}$ :  $\log_{10} \Phi_{e}(>E) = -1.25E + 7.2$ 

The flux represents the number of electrons per  $\mbox{cm}^2$  per  $\mbox{sec}$  above ergy E (in MeV).

#### 2 Protons

The integral proton fluence spectrum for the mission is to be epresented by the following expressions:

.014 E \( \pm 1.0 \) MeV: 
$$\Phi_{\rm p}$$
 (>E) = 6.5 x 10<sup>15</sup> exp(-9.0E) p/cm<sup>2</sup>/ 7 years .0 \( \pm E \) MeV:  $\Phi_{\rm p}$ (>E) = 1.5 x 10<sup>12</sup> E<sup>-1.53</sup> p/cm<sup>2</sup>/cycle

The low energy portion of the spectrum is mainly from the trapped radiation environment and is relatively constant with time.

The high energy portion of this spectrum, which represents the solar flare content of the worst known period (cycle 19) is a conservative estimate. Since major solar flares can occur at any time, the spectrum is represented for the whole cycle and cannot be predicted on any other time base.

# 2.3 Alpha Particles

The alpha particle integral fluence is to be taken as 5% of the . The proton fluence.

# 2.4 Ultraviolet Radiation

The UV spectrum normalized to the Johnson curves for a solar constant at 1 AU of 0.14 watts/cm<sup>2</sup> is summarized in the following table.

Wavelenght (Å)	Fraction of Total Energy below hc/2	Energy	(ergs/cm <sup>2</sup> /yr)
1.0	~10-11	102	- 10 <sup>3</sup>
10	<b>~</b> 10 <sup>−8</sup>	105	- 10 <sup>6</sup>
100	~ 10-6	107	- 10 <sup>8</sup>
. 500	~ 10 <sup>-6</sup> ·	1	x 10 <sup>8</sup>
1000	~,10 <sup>-5</sup>	4	x 10 <sup>8</sup>
1500	0.6 x 10 <sup>-4</sup>	2.5	x 10 <sup>9</sup>
2000	1.5 x 10 <sup>-4</sup>	6.0	x 10 <sup>9</sup>
2500	2.1 x 10 <sup>-3</sup>	9.0	x 10 <sup>10</sup>
3000	$1.2 \times 10^{-2}$	5.0	x 10 <sup>11</sup>
4000	$9.0 \times 10^{-2}$	4.0	× 10 <sup>12</sup>
5000	$2.4 \times 10^{-1}$	1.1	× 10 <sup>13</sup>

# 2.5 Micrometeoroids

The flux of penetrating micrometeoroids encountered at synchronous altitude is to be taken from the following table.

T (cm)	$\Phi_{\mathfrak{m}(\mathfrak{m}^{-2}Day^{-1})}$
0.001	$7.0 \times 10^{-1}$
0.004	3.5 x 10 <sup>-1</sup>
0.010	1.0 x 10 <sup>-1</sup>
0.040	$7.0 \times 10^{-3}$
0.10	$6.0 \times 10^{-4}$
0.40	1.0 x 10 <sup>-5</sup>
1.0	$5.0 \times 10^{-7}$
4.0	$4.5 \times 10^{-9}$

Where "T" is the penetration thickness in aluminum and  $\boldsymbol{\tilde{q}}_{m}$  is the number of micrometeoroids per day penetrating this thickness over a 1.0 square meter area. The crater diameter produced by a particle impact is to be taken as five times the particle penetration thickness.

# 3. TRANSFER ORBIT CONDITIONS

Contributions from natural radiation sources may be considered to have negligible effect during the transfer orbits as long as the number of orbits is low (<20).

# APPENDIX L

THE SPACE RADIATION AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES



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THE SPACE RADIATION ENVIRONMENT AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES

by ROBERT W. ROSTRON COMSAT Laboratories Clarksburg, Maryland

# AIAA 3rd Communications Salchile Systems Conference

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# THE SPACE RADIATION ENVIRONMENT AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES \*

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#### Abstract

An extensive study has been performed to evaluate the radiation environment encountered by a synchronous communications satellite and to analyze the effect of this environment on photovoltaic power sources. The results of this study, which are based on the latest available satellite and laboratory data, have been formulated into a working engineering model designed for use in predicting satellite performance and operational lifetime. This model is presented graphically and analytically in the form of trapped electron and proton fluences and solar proton fluence as a function of particle energy. In addition, curves are presented showing equivalent 1.0-MeV electron fluences as a function of solar cell cover-slide thickness and solar cell output degradation as a function of time in orbit. Anomalies such as low-energy proton damage, coverslide darkening, and penetration of lowenergy solar flare protons into the magnetosphere are also treated.

#### Introduction

The operational lifetime of a communications satellite is strongly dependent upon the capability of its photovoltaic prime power source to withstand the damaging effects of the space radiation environment. Accurate assessment of this environment is essential in the design of communication satellites and in evaluation of their performance. Until the launch of ATS-1 into synchronous orbit late in 1966, data depicting the radiation environment of the geostationary orbit were sparse and unreliable. This uncertainty forced spacecraft designers to incorporate extremely high safety margins into the design of their photovoltaic power sources to allow for radiation degradation. These designs were unduly conservative in many cases but proved to be inadequate in other instances.

The present effort incorporates the data obtained by ATS-1, as well as earlier data, into a working engineering model of the space radiation environment encountered by a communications satellite, and delineates the effects of this environment on the spacecraft's prime power source.

Curves and analytical approximations are developed for the time-integrated radiation fluxes encountered by a communications satellite inserted into synchronous orbit from both a Hohman transfer orbit

and a spiral-up transfer orbit. The corresponding radiation fluences include trapped protons and electrons encountered in the geostationary orbit and in the transfer orbit, as well as solar flare protons encountered in the synchronous orbit.

#### II. Environment

The radiation environment encountered by a communication satellite is many faceted, running the gamut from cosmic rays to micrometeoroids. Emphasis in this report is placed on the trapped proton and electron and solar flare proton components of the environment since these particles inflict the most serious damage on spacecraft components.

#### Transfer Orbit Environment

During the course of attaining synchronous equatorial orbit, a communication satellite may spend several hours, several days or several months in its transfer orbit. For direct injection, the spacecraft is placed directly into synchronous orbit with a negligible encounter with the radiation belts during the transfer period. For injection from a Hohman transfer ellipse as used by INTELSAT, the satellite may spend up to six days in its transfer orbit with a substantial exposure to the high intensity radiation belts. Also, the Molniya communication satellites operate from an orbit nearly the same as that of the INTELSAT transfer orbit. Tuture communication satellites may be injected into synchronous orbit from a spiral-up transfer orbit, a mission requiring about ninety days for completion. In order to prevent serious radiation damage to the solar cells during such a mission, shielding far in excess of that now provided on INTELSAT satellites would be required.

Maps of the trapped radiation belts have been compiled by Vette et al (1)
(Figure 1) in several documents published by NASA. These maps were formulated from experimental satellite data collected during the period from 1961 to 1967 and constitute the most comprehensive model of the space radiation environment presently available. The Vette data include electron and proton fluxes at synchronous altitude, which were obtained from satellites in highly elliptical orbits which passed periodically through the proper regions of space. The Vette data are therefore not considered to be as accurate as data provided from the ATS-1 satellite during the 1967-1969 period.

<sup>\*</sup>This paper is based upon work performed at COMSAT Laboratories under INTELSAT sponsorship.

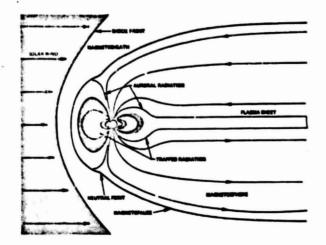


FIGURE 1. NEAR EARTH SPACE RADIATION ENVIRONMENT

With the use of the Vette models and appropriate transfer orbit parameters in a computer program, it has been possible to assess the radiation environment encountered by a spacecraft in the Hohman transfer orbit and in the proposed spiral-up transfer orbit. The results are presented in Tables 1 through 4 as particle fluences for protons and electrons as a function of energy. The environment represented in Tables 1 and 2 is nearly identical to that which would be experienced by a Molniya satellite in one revolution or approximately eleven hours.

Proton En	ergy (MeV)	Proton Fluence (p/cm <sup>2</sup> /orbit)
Lower Limit	Upper Limit	
4.00 6.75 9.50 12.25 15.00 18.75 22.50 26.25 30.00 35.00	6.75 9.50 12.25 15.00 18.75 22.50 26.25 30.00 40.00 45.00	3.235 x 10 <sup>8</sup> 1.342 0.579 0.255 0.0513 0.0378 0.0281 0.0210 0.0291 0.0161 0.00960
45.00 50.00 62.50 75.00	50.00 62.50 75.0 100.0	0.00610 0.00467 0.00303 0.00389
100.0	200.0	0.00652

TABLE 1. DIFTERENTIAL PROTON FLUENCE PER HOHMAN TRANSFER ORBIT

eV) (e/cm /orbit)
imit
2.182 x 1010
1.097
0.606
0.190
0.145
0.114
0.0883
0.122
0.0596
0.0208
0.0164
0.0226
0.00727
0.00727

TABLE 2. DIFFERENTIAL ELECTRON FLUENCE PER HOHMAN TRANSFER ORBIT

ELECTRON ENERGY (E in MeV)	ELECTRON FLUENCE (e/cm² with energy greater than E)		
0.5	7.62 x 1013		
0.75	2.33		
1.5	0.400		
2.5	0.0871		
4.0	0.0249		
7.0	0.0112		

TABLE 3. INTEGRAL ELECTRON FLUENCE FOR 90-DAY SPIRAL-UP TRANSFER ORBIT

PROTON ENERGY (E in MeV)	PROTON FLUENCE (p/cm <sup>2</sup> with energy greater than E)
0.4	8.6 x 1014
1.4	1.4
4.0	0.021
5.0	0.012
10.0	0.0029
15.0	0.00058
30.0	0.00017

TABLE 4. INTEGRAL PROTON FLUENCE FOR 90-DAY SPIRAL-UP TRANSFER ORBIT

Due to the relatively short time spent by the spacecraft in its transfer orbit and to the effective shielding against solar flare protons by the earth's magnetic field at low altitudes, the effects of all other radiations on satellite performance are completely negligible.

#### Geostationary Orbit Environment

The principal radiation degradation sustained by components in an INTELSAT spacecraft is induced by the charged particle environment encountered over a long time period in the synchronous equatorial orbit. In addition to charged



particle damage, cosmic rays, ultraviolet light, and micrometeoroids tend to produce effects which are detrimental to satellite performance in varying degrees.

#### Trapped Electrons

Electron data collected from detectors aboard ATS-1 have been analyzed and are displayed graphically in Figure 2. The solid curve depicts the time-averaged integral electron flux as a function of energy. The broken curve represents the softer spectrum obtained from using Vette's data.

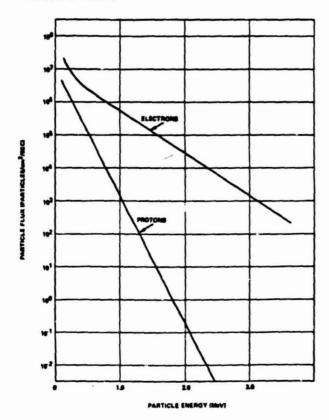


FIGURE 2. TIME-AVERAGED TRAPPED FLUX AT SYNCHRONOUS ALTITUDE

The ATS-1 data have been curve fitted by two approximating expressions, one following a power law and the other being exponential. These expressions are as follows:

$$0.05 \le E \le 0.5$$
,  
 $\Phi_{e}(>E) = 7.96 \times 10^{5} E^{-1.56}$  (1a)  
 $0.5 \le E$ ,

$$\Phi_{e}(>E) = 1.00 \times 10^{7} \exp(-2.94 E)$$
 (1b)

where E = electron energy in MeV, and

\$\Phi\_e(> E) = electron flux in electrons/
cm²/sec with energy greater
than E (integral flux).

One of the interesting sidelights resulting from analysis of the ATS-1 electron data is the periodic variation of the electron flux intensity shown in Figure 3. The electron flux drops several orders of magnitude (essentially to zero) once every 6-1/3 days after remaining relatively constant during this time period. Such variations exemplify the need to develop a model of the synchronous radiation environment from data recorded by detectors aboard experimental satellites in the geostationary orbit.

#### Trapped Protons

The trapped proton flux encountered at synchronous altitude is negligible above energies of a few MeV. The time-averaged trapped proton flux over the energy range of 0.11 to 4.0 MeV is represented graphically in Figure 2. This data was obtained from a report by King<sup>(2)</sup> and may be fitted by the exponential approximating equation:

$$0.11 \le E \le 4.0$$
,  
 $\Phi_p(>E) = 1.80 \times 10^7 \exp (-9.0 E)$  (2)

where E = proton energy in MeV, and

Φ<sub>p</sub>(> E) = proton flux in protons/ cm²/sec with energy greater than E.

# Solar Flare Protons

Although many theories have been advanced to predict solar flare activity, it is still virtually impossible to accurately determine in advance the total solar proton fluence that would impinge on a communication satellite over a several-year period. Since reliable predictions are unavailable, it becomes advantagees to examine the solar proton fluence conceded during the last complete solar cycle and correlate this information with current solar flare activity.

The last complete solar cycle, Cycle 19, began in April 1954 and ended in October 1964. This was the first cycle

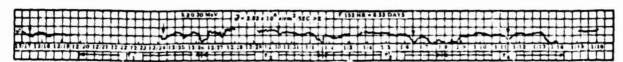


FIGURE 3. VARIATION OF ELECTRON FLUX AT SYNCHRONOUS ALTITUDE WITH TIME

during which solar flare protons were monitored by detectors aboard satellites. Data from these satellite measurements as well as rocket and balloon data have been collected and analyzed by COMSAT Laboratories. The total solar flare proton fluence for Cycle 19 has been determined as a function of proton energy. These data, which are plotted in Figure 4, may be curve fitted by the following expression:

Cycle 19:  $\Phi_{SP}$  (> E) = 1.5 x  $10^{12}E^{-1.53}$ 

(3)

where E = solar proton energy in MeV, and

\$\Phi\_{sp} (> E) = integral solar proton
fluence in protons/cm².

The year of maximum intensity during Cycle 19 was 1959 and the solar proton fluence data for this year is also shown in Figure 4. The fluence data for 1959 may be curve fitted by the following expression:

1959:  $\Phi_{\text{sp}}$  (> E) = 1.3 x  $10^{12} \text{E}^{-1.73}$ 

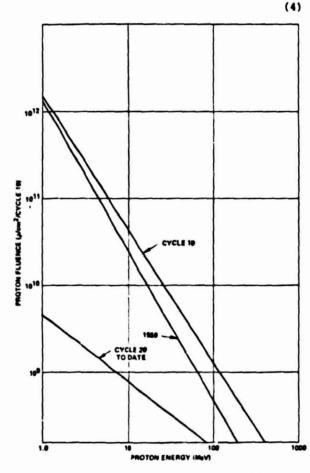


FIGURE 4. UNATTENUATED SOLAR PROTON FLUENCE

A satellite at synchronous altitude would not be expected to encounter the total proton fluence represented in Figure 4 due to the protective shielding of the earth's magnetic field. This field falls off from the earth's surface approximately ar a dipole field and thus the higher the energy of the impinging solar particle, the more deeply it penetrates the field. Only extremely high energy protons are capable of reaching the earth's surface.

An analytical model for predicting the proton energy required to penetrate the earth's magnetic field to various altitudes has been developed by Stormer. This model predicts that, during periods when the geomagnetic field is undisturbed, spacecraft at synchronous altitude will be shielded from solar protons with energies less than 30 MeV. However, extension of Stormer's work to include a disturbed magnetic field at synchronous altitude -the case during a solar storm--indicates that solar protons with energies as low as 4.0 MeV will penetrate to synchronous altitude, as is shown graphically in Figure 5. Penetration of low-energy protons to synchronous altitude was borne out by data from ATS-1. Indeed the number of protons of all energies was observed to increase substantially during solar flare activity. Unfortunately this fact was not taken into account in the design of spacecraft prior to the launch of ATS-1.

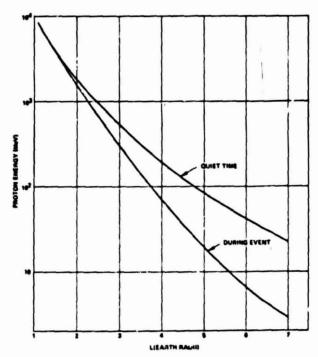


FIGURE 5. PROYON TOTAL CUTOFF ENERGY FOR GEOMAGNETIC STORM AND QUIET TIMES

Solar Cycle 20 is at this time experiencing its maximum. Satellite data is continually being collected and analyzed

with the aim of providing a solar flare proton fluence model for Cycle 20 as soon as feasible. The solar fluence spectrum for Cycle 20 through 1968 is also shown in Figure 4. Since Cycle 19 exhibited a worst case from the standpoint of solar proton activity, and since Cycle 20 is not expected to exceed Cycle 19 in proton activity, the solar flare proton model of Cycle 19 will continue to be recommended for use in satellite design calculations.

#### Galactic Cosmic Rays

The integrated yearly intensity of galactic cosmic rays reaching the vicinity of the earth has remained fairly constant at about 108 particles/cm²/year for over 50,000 years. (3) It is generally accepted that for energies above 1.0 BeV, the cosmic ray integral energy spectrum can be represented by the following expression:

$$\Phi_{C}(\geq E) = CE^{-7} \frac{\text{nuclei}}{\text{m}^2-\text{sterad-sec}}$$
 (5)

where E = total energy of nuclei in BeV,

Φc(> E) = integral particle flux,

$$1.4 \le \gamma \le 2.13$$
, and

$$5 \times 10^3 \le c \le 10^7$$
.

In general, the particle intensity and interaction cross section for galactic cosmic rays are too small to produce detrimental effects in satellite components.

#### Ultraviolet Radiation

Ultraviolet radiation incident on a spacecraft produces color changes in thermal coatings and darkening of solar cell cover assemblies, thus reducing their efficiencies. The Johnson (4) curves for solar uv radiation incident on the earth's upper atmosphers have long been accepted as the standards. However, later data are now available based on work by Thekaekara (5) et al and these data are presented in Table 5. The visible and infrared spectra are also included in the table for reference. Figure 6 shows a comparison of the Johnson and Thekaekara solar irradiance spectra.

Wavelength in microns;  $P_{\lambda}$  = solar spectral irradiance averaged over a small bandwidth centered at  $\lambda$ , in watts cm<sup>-2</sup> micron<sup>-1</sup>;  $D_{\lambda}$  = percentage of the solar constant associated with wavelengths shorter than wavelength  $\lambda$ ; and solar constant = 0.13510 watt cm<sup>-2</sup>.

λ	Pa	Dλ	λ	Pa	D <sub>A</sub>
0.140	0.0000048	0.00050	0.295	0.0584	1.020
0.150	0.0000176	0.00059	0.300	0.0514	1.223
0.160	0.000059	0.00087	0.305	0.0602	1.1430
0.170	0.00015	0.00164	0.310	0.0686	1.668
0.180	0.00035	0.00349	0.315	0.0757	1.935
0.190	0.00076	0.00760	0.320	0.0819	2.227
0.200	0.00130	0.0152	0.325	0.0958	2.555
0.205	0.00167	0.0207	0.330	0.1037	2.925
0.210	0.00269	0.0288	0.335	0.1057	3.312
0.215	0.00445	0.0420	0.340	0.1050	3.702
0.220	0.00575	0.0609	0.345	0.1047	4.090
0.225	0.00649	0.0835	0.350	0.1074	4.483
0.230	0.00667	0.1079	0.355	0.1067	4.879
0.235	0.00593	0.1312	0.360	0.1055	5.271
0.240	0.00630	0.1534	0.365	0.1122	5.674
0.245	0.00723	0.1788	0.370	0.1173	6.099
0.250	0.00704	0.2033	0.375	0.1152	6.529
0.255	0.0104	0.2375	0.380	0.1117	6.949
0.260	0.0130	0.2808	0.385	0.1097	7.359
0.265	0.0185	0.3391	0.390	0.1099	7.765
0.270 0.275 0.280 0.285 0.290	0.0232 0.0204 0.0222 0.0315 0.0482	0.4163 0.4960 0.5758 0.6752 0.8225	0.395 0.400	0.1191 0.1433	8.189 8.675

TABLE 5. SOLAR ULTRAVIOLET IRRADIANCE

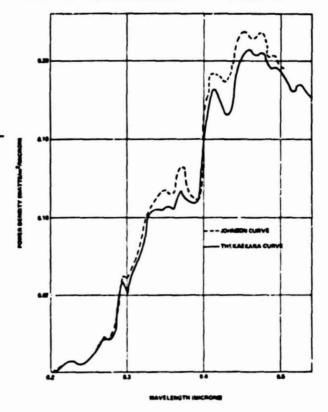


FIGURE 6. SOLAR SPECTRAL IRRADIANCE

#### Micrometeoroids

Material particles with a broad distribution in size, structure, density, and velocity constitute a flux of micrometeoroids that can potentially prove hazardous to a satellite. The best available estimates of these fluxes as a function of particle mass and penetration capability are shown (6) in Figure 7. A micrometeoroid will generally penetrate a thin target about 1.5 times as thick as the crater depth it would produce in a thick target of the same material. The principal damage expected to be sustained by a spacecraft from micrometeoroids is a reduction in transparency of the solar cell cover slides. The effect is similar to sandblasting the cover glass surface and could result in a light transmission loss as high as I percent in a ten-year mission.

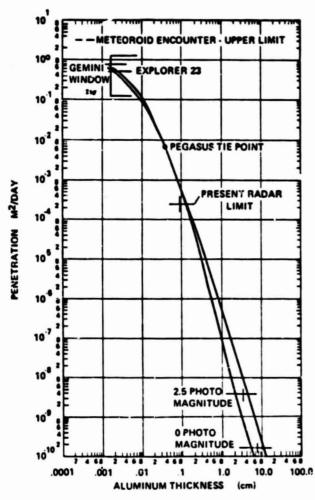


FIGURE 7a. MICROMETEOROID PENETRATION FREQUENCY IN ALUMINUM

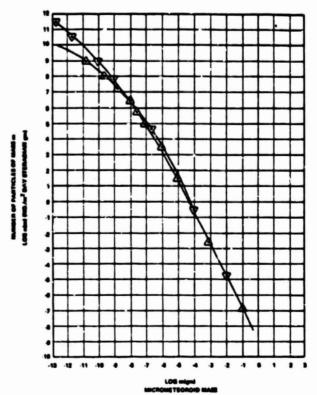


FIGURE 7b. MICROMETEOROID FLUX AS A FUNCTION OF MASS

#### III. Radiation Effects

The photovoltaic energy converters, which constitute the primary power source on communication satellites, and certain MOS transistors used in the telemetry and command systems, are the spacecraft components most susceptible to performance degradation through exposure to the space radiation environment. The least penetrating of the charged particle radiation -low-energy protons--constitute the greatest hazard to solar cell performance, while the highly penetrating electrons produce the major portion of the damage sustained by MOS transistors housed within the spacecraft. Fortunately, glass shields can be used to prevent low-energy protons from reaching the solar cell and the MOS transistor circuits can be shielded from penetrating electrons by metal housings.

#### Solar Cell Degradation

Solar cells exposed to charged particle radiation will suffer performance degradation due to two mechanisms. The first effect is a decrease in the base region minority carrier lifetime, because the damaging radiation creates displacements which leads to an increase in the density of recombination centers. The carriers produced by the light entering the cell are consequently less likely to reach the junction before recombination occurs, which produces a reduction in the short circuit current of the cell and, to a lesser

degree, in the open circuit voltage.

The second damage effect is produced by low-energy-charged particles which just penetrate the surface of the solar cell but do not reach the base region. These particles (generally protons) produce generation-recombination centers close to the junction which cause enhanced generation and increased leakage current, thus drastically reducing the open circuit voltage. A second effect which may be produced by low-energy protons is ionization in the antireflective oxide coating on the surface of the solar cell. This ionization can produce a change in the surface potential and invert the silicon at the surface. The resultant inversion layer causes junction leakage to increase, thus reducing the open circuit voltage. It is these effects which can be prevented by shield-ing the solar cell with a minimum thick-ness of cover glass. However, care must be taken to fully cover the photo-sensitive surface of the solar cell. The decrease in voltage, and thus power output, due to low-energy protons is not a linear function of the exposed surface area and a small uncovered area may result in a large decrease in output power.

This type of damage was suffered by the main solar arrays of ATS-1 and INTELSAT II F-4. A typical curve (7) depicting power output degradation of a silicon solar cell with a small area of surface exposed is shown in Figure 8. Protons of energies 150 keV and 270 keV were chosen to ensure their penetration into the surface and junction regions of the solar cell but not beyond. A satellite which is in the geostationary orbit for three years will be exposed to fluences of about 1014 protons/cm² having energies in the 150- to 270-keV range. Thus full shielding of the light sensitive area of the solar cell is mandatory.

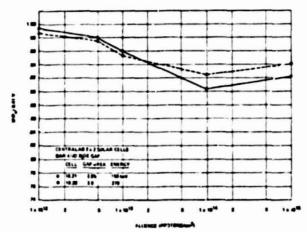


FIGURE 8. PROTON RADIATION DAMAGE IN COVERED SOLAR CELLS WITH BAR AND SIDE GAPS

#### Equivale. Fluences

As just pointed out, it is relatively simple to protect solar cells on space-craft from the damaging effects of low-energy protons by utilizing appropriate cover slides. However, the more penetrating radiation can not be prevented from reaching the base region of the solar cell by any practical means. Thus it is imperative in attempting to size the solar array for a spacecraft to be able to predict the solar cell performance degradation due to penetrating radiation over the lifetime of the mission. The following analysis is set forth to aid spacecraft designers in predicting solar array degradation.

It was stated that penetrating radiation causes a decrease of the minority carrier lifetime in the base region of the solar cell. A decrease in minority carrier lifetime will subsequently reduce the minority carrier diffusion length and it is the change in diffusion length with irradiation that is usually measured. This decrease in diffusion length has been measured experimentally and found to fit the following analytical expression:

$$\frac{L^2}{Lo^2} = \frac{1}{1 + K\Phi Lo^2} \tag{6}$$

Lo = diffusion length before irradiation (cm).

K = radiation damage coefficient(particles  $^{-1}$ ).

The damaging radiation represented by  $\Phi$  may be either electromagnetic or particulate in nature, and the damage coefficient depends on the type of radiation, its energy and incident angle, as well as the type of semiconductor material.

In space, the primary types of damaging radiation are protons and electrons. These particle fluxes are energy dependent and are considered to have an isotropic distribution. Thus for space, the value of KO in Equation 6 must be determined by evaluating the triple integral:

$$K\Phi = \iiint_{E} K' (E,\Omega) \neq (E,\Omega,t) \text{ ded } \Omega \text{ dt}$$
(7)

where K' (E, $\Omega$ ) = damage coefficient for a particular type of radiation,

ψ(E,Ω,t) = particle flux,

E = energy of particles,

Ω = angle of incidence of particles, and

t = time.

Evaluation of the integral is performed in the following manner. The radiation flux in space is generally considered to be isotropic and thus angle dependence may be eliminated from the flux term. Further, the fluxes in space may be time averaged, allowing the integration over time to be replaced by the product of the time-averaged flux and the elapsed time interval

Values of the radiation damage coefficient for electrons and protons of various energies and incident angles have been determined for n on p, 10Ω-cm, bare silicon solar cells and normalized to the damage coefficient for normally incident, 1.0-MeV electrons. The resultant quantity is labeled the (normalized) equivalent 1.0-MeV electron damage coefficient and is a function of energy only. Based upon this experimental data and the known shielding characteristics of cover slides, equivalent damage coefficients as a function of cover-slide thickness have been computed (8). Figures 9 and 10 depict the results of these data and calculations.

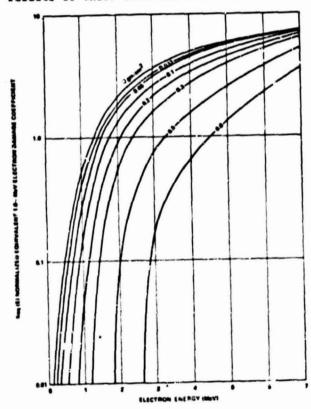


FIGURE 9. EQUIVALENT DAMAGE COEFFICIENT
FOR A MONOFULKGETIC ISOTROPIC
ELECTRON FLUX ON N/P SILICON
SOLAR CELLS AS A FUNCTION OF
ELECTRON ENERGY AND SOLAR CELL
COVER-SLIDE THICKNESS

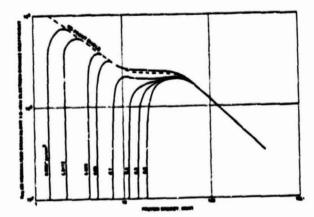


FIGURE 10. EQUIVALENT DAMAGE COEFFICIENT
FOR A MONOENERGETIC ISOTROPIC
PROTON FLUX ON M/F MILICON
SOLAR CELLS AS A FUNCTION OF
PROTON ENERGY AND SOLAR CELL
COVER-SLIDE THICKNESS

The triple integral of Equation 7 may thus be reduced to a single integral over the energy range of interest or

$$K\Phi = K_1 t \int_{\Xi} Keq (E) \varphi (E) dE$$
 (8)

where K<sub>1</sub> = damage coefficient for normally incident 1.0-MeV electrons on a bare silicon solar cell,

t = time interval (sec),

Req = normalized equivalent damage coefficient for a particular type of particle (dimensionless), and

particle flux (particles/cm²/
sec).

An integral similar to that in Equation 8 must be evaluated for each open of radiation of interest. Numerical interration of these integrals can be readily performed for any space environment of interest for which the fluence data are available. The corresponding change in diffusion length with time in space may be found from the following equation:

$$\frac{L^{2}}{Lo^{2}} = \frac{1}{1 + K_{1}t \int [\text{Kee } (E) \varphi e (E) + \text{Kep } (E) \varphi p] dE}$$
(9)

where Kee = normalized equivalent dam-..ge coefficient for electrons, Kep = normalized equivalent
 damage coefficient for
 protons,

φe(E) = electron flux, and

⟨p(E) = proton flux.

Computer programs have been formulated to generate the equivalent 1.0-MeV electron fluence at the solar cell surface as a function of front shield thickness for the damaging charged particle environments encountered by an INTELSAT spacecraft. The results of these programs are shown in Figures 11 and 12 as equivalent 1.0-MeV fluences for spiral-up and Hohman transfer orbit trapped protons, trapped electrons and solar flare protons in the geostationary orbit, and trapped protons in the Molniya orbit. Other forms of particle radiation equivalents are not presented since they are negligible from a damage standpoint.

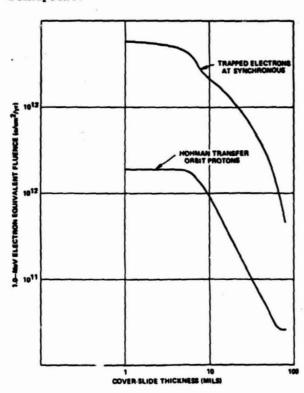


FIGURE 11. EQUIVALENT 1.0-MeV ELECTRON DOSES

#### Degradation Parameters

It has been demonstrated experimentally (9) that the short circuit current of a solar cell varies with the logarithm of the minority carrier diffusion length in accordance with the following expression:

(10)

where

Isc - short circuit current in amperes,

L = minority carriers diffusion length in centimeters, and

a & b are constants.

Thus, for a solar cell which has sustained radiation damage, the following relationship exists:

$$\frac{Isc}{Isco} = \frac{a+b \log L}{a+b \log Lo} = \frac{1+c \log L}{1+c \log Lo}$$
 (11)

where c = b/a,

Isco = short circuit current before
 irradiation,

Isc = short circuit current before irradiation, and

Lo = minority carrier diffusion length before irradiation.

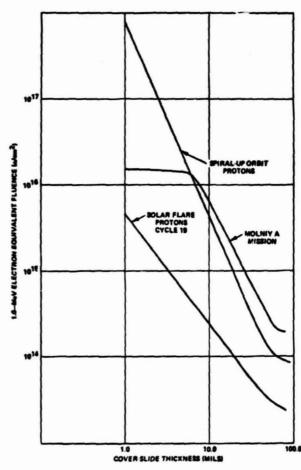


FIGURE 12. EQUIVALENT 1.0~MeV ELECTRON DOSES

Substitution of Equation 6 into Equation 11 yields the following:

$$\frac{Isc}{Isco} = \frac{1 - c/2 \log [1/Lo^2 + R\Phi]}{1 + c \log Lo}$$
 (12)

In order to determine the actual behavior of solar cells subject to irradiation by 1.0-MeV electrons, typical INTELSAT
III silicon solar cells were irradiated
and their decrease in short circuit current was recorded. Figure 13 shows the
result of these irradiations and indeed
the curve is typical of all silicon solar
cells. Equation 12 may be correlated with
the experimental data by evaluating constants c, Lo, and K. In this case K = K1,
the damage coefficient for 1.0-MeV electrons. (The cells irradiated were unshielded.)

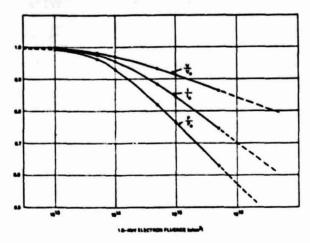


FIGURE 13. OUTPUT PARAMETER DEGRADATION-INTELSAT III SOLAR CELLS

The value of  $K_1$  has been determined to be 5.8 x  $10^{-11}$  for n on p,  $10\Omega$ -cm, silicon solar cells. Using this value and curvefitting techniques, it is found that

Lo = 0.015 cm, and

c = 0.189.

The dimensions of Lo, K, and  $\Phi$  in Equation 12 are inherent in its derivation and, in using this equation, Lo is expressed in centimeters and  $\Phi$ , in particles/cm<sup>2</sup>.

Expressions analogous to Equation 12 may be derived for open circuit voltage and maximum power degradation; however, since actual experimental curves are available for specific solar cells, it is preferable to utilize these curves for actual computations. Figure 13 shows open circuit voltage and maximum power degradation curves for INTELSAT III solar cells.

# Cover Assembly Degradation

It has been known for some years that

the glass cover-slide material used to shield solar cells from particulate radiation was susceptible to darkening under exposure to intense fluxes of protons and electrons. It was also known that the adhesive material used to attach the cover slides to the solar cell would darken when exposed to ultraviolet and particulate radiation. However, through use of uv filters and choice of the proper coverslide material, these effects were thought to have been reduced to negligible proportions. This conclusion was drawn after ground tests in the laboratory. Latest ATS-1 data show that this darkening effect can cause up to an 8-percent decrease in power output of a solar cell. While conclusive data are not yet available, it is believed that the darkening is caused by the synergistic effects of ultraviolet and particle radiation. For design purposes, in the absence of reliable data, INTELSAT IV spacecraft are assumed to experience a 7.5-percent power degradation due to this effect.

### Internal Component Degradation

Many of the semiconductor devices used in communications satellites would suffer performance degradation if exposed to the radiation environment at synchronous altitude for a prolonged period. Natural shielding of these components is provided by their metal housings. This shielding is adequate except in the case of the highly sensitive MOS devices. Figure 14 shows the radiation dose received by satellite components as a function of shielding thickness. It may be seen that the dose due to solar flare (and this is also true for trapped protons) is essentially negligible compared to that sustained from trapped electrons. Since most semiconductor components will operate satisfactorily at accumulated doses of 106 rad(Si), a nominal 1/16-inch aluminum housing will provide adequate shielding for a ten-year mission at synchronous altitude. However, MOS devices may tend to malfunction after

accumulating a dose of only 10<sup>4</sup> rad(Si) and will require about 3/16 inch of shielding for a ten-year mission. Such shielding requirements present no particular design problems but necessarily must be taken into account.

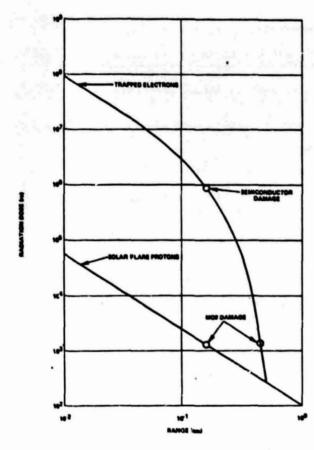


FIGURE 14. INTERNAL RADIATION DOSE AT SYNCHRONOUS ALTITUDE

#### IV. Summary

The radiation environment encountered by a satellite in the geostationary orbit has been presented along with data to enable prediction of the effects of this environment on satellite components. The environmental model was determined from analysis of latest satellite data and is considered the most accurate to date. The method of predicting radiation damage to silicon solar cells by correlation of various particle fluxes with a 1.0-MeV electron current does not give a true picture, although it does represent the best method presently available and allows for conservative sizing of a solar array. The equivalent 1.0-MeV electron fluences encountered by various communication satellites and the effects of these fluences are shown in Table 6.

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	31.00	****	30.010		****	24.4"
***	0.679				• 44	0.87

TABLE 6. SOLAR CELL RADIATION DAMAGE

#### References

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